STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION

BULLETIN No. 6

IRRIGATION REQUIREMENTS OF CALIFORNIA LANDS

BEING

APPENDIX "B"

TO

Report to the Legislature of 1923

ON THE

Water Resources of California

CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO, 1923

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FOREWORD.

The legislature of 1921 appropriated $200,000 for an investigation of California's water resources by the State Department of Public Works, Division of Engineering and Irrigation. Accordingly, an engineering investigation has been completed and a report transmitted to the legislature on January 1, 1923. The great mass of data collected and the complex analyses thereof made it advisable to present much of this information in separate volumes. Four of these are in print, entitled:

APPENDIX "A" "Flow in California Streams." Bulletin No. 5, State Department of Public Works.

APPENDIX "B" "Irrigation Requirements of California Lands." Bulletin No. 6, State Department of Public Works.

APPENDIX "C" "Utilization of the Water Resources of California." Bulletin No. 7, State Department of Public Works.

APPENDIX "D" "Relation of Settlement to Irrigation Development." Bulletin No. 8. State Department of Public Works.

Chapter 889 of the 1921 Statutes, which authorized this investigation, provided for the appointment by the Governor, of a Consulting Board to advise with the Department in their endeavors. The following were appointed by Governor Stephens:

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Additional advice on the technical features of Appendix "B" has been sought by the Department from:

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ACKNOWLEDGMENT.

Much data have been contributed to this report by public and private offices without which the Department would have been wholly unable to produce this volume. The Department desires to publicly express its sincere appreciation to the parties who, through the furnishing of these data, have made it possible for the Department to increase its service to the public several-fold in publishing this report.

ORGANIZATION.

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The investigation of the water resources of the state and the preparation of the report thereon, was planned, directed and brought to completion by

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Plate IV was prepared in the office of the Grunsky Engineering Corporation by E. L. Grunsky

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CHAPTER I.

AGRICULTURAL LANDS.

The agricultural lands of the State of California comprise a total area of 23,000,000 acres[1] or 35,000 square miles. These lands are located on the floors of the valleys and in the foothills and plateaus of the state; the remainder, or three-quarters of the state's area, is either mountainous with steep or precipitous slopes, soilless, too rocky for cultivation, or irreclaimable desert with barren or alkaline flats. Thus only a quarter of the state's total area is agricultural.[2] This comparative relation is strikingly contrasted by the proportion of agricultural lands of the whole United States where a half of the total area is agricultural.[3]

California's agricultural lands are those portions of the state that have suitable soils, disposed in appreciable areas of regular surface conformation, favorable climate, and other requisite conditions for the production of harvestable crops. Included in these, are lands at present deficient in natural moisture, but more or less conveniently situated for the ultimate acquisition of an accessory water supply.

Of the non-agricultural region, the mountains and their precipitous and rocky terraces, through glacial action, weathering and erosion, have supplied the alluvial earth that the rivers and streams have conveyed and deposited to become the fertile and productive soil of the agricultural valleys.

The mountainous portion of the state's non-agricultural lands, while precipitous, rocky or soilless, and comprising three-fifths of the area of California, is indispensable, nevertheless, to the development of the agricultural lands in being the collecting area for precipitation and its concentration into streams, without which collected waters much of the agricultural area would be no more productive than the desert. The vast mountain regions of California are two and a half times the area of the agricultural lands, and occupy well over half the space inclosed within the state's boundaries. The relative areas and locations of the agricultural and mountainous lands of the state are shown on Plate V, "Map of Agricultural Areas and Duty of Water Sections." The agricultural lands are there delineated in green.

The most extensive and continuous body of agricultural land lies in the long and centrally located valley between the two main mountain ranges of the state, the Sierra Nevada and the Coast Range Mountains, being bounded on the north by Mount Shasta and on the south by the closure between the Coast and the Sierra Nevada ranges at Tehachapi Pass. This valley, the north half of which is the Sacramento and the

[1] From Irrigation Map of California, U. S. Department of Agriculture, 1920, 22,506,000 acres. (Exclusive of areas included within cities, principal towns and the channels of the larger streams.)

[2] Agricultural Census, U. S. Census Bureau, 1920, 35,255 square miles out of total area of the State of California of 157,857 square miles, which total contains 2205 square miles of water surface.

[3] Excluding Alaska, Agricultural Census, 1920.

south half the San Joaquin, is four hundred and fifty miles long and averages fifty miles wide, with a total area of 21,000 square miles, or 14,000,000 acres of tillable land. This great valley contains three-fifths of the total agricultural lands of California; thus the principal portion of the farming area lies along the axis and in the center of the state.

The remainder of the agricultural land is distributed along the borders of the state, and in parcels that are relatively small compared to the lands of the central valley; except for portions south of the Tehachapi Pass. Here one-tenth of the total agricultural lands of the state lies west of the crest of the mountain range that separates the Pacific Coastal plains from the desert, and one-tenth lies on the eastern side of this dividing range and principally in Imperial, Antelope and Victor valleys; along the eastern border of the state, east of the Sierra Nevada Mountains, one-fortieth lies in the valleys south of Lake Tahoe, and one-twentieth in the mountain valleys north of Lake Tahoe and on the plateaus east of Mount Shasta; along the westerly border of the state, three-fortieths lie in the coastal valleys of the Pacific slope of the Coast Range Mountains and between the Oregon line and the Santa Barbara Channel.

These agricultural lands produce, or are capable of producing, the grains, fruits, berries, grapes, vegetables, and the other farm products of the state, and slightly over half[1] of this total agricultural producing area was farmed in 1920. The history of the development of these agricultural lands is graphically represented on Plate 1, "Expansion of Agricultural Industry in California."

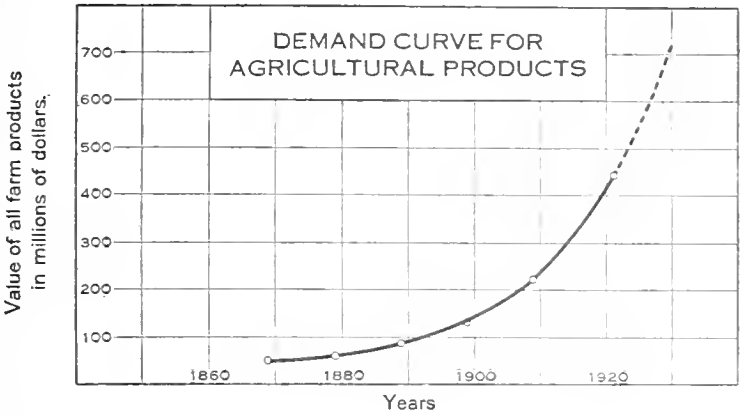
On Plate I, the demand for agricultural products from 1870 to the present day is shown by a curve expressing the values of agricultural produce marketed in the various years.[2] A second curve shows the expansion of the improved area in farms as this demand increased. A third curve, taking its origin with the beginning of irrigation in 1870, depicts the increase in the farming area receiving irrigation waters in succeeding years. The upwardly directed sections of these curves, which are drawn to connect the values in successive years, represent increase in value or expansion of acreage. The steeper slopes indicate a greater rate of increase, and sections parallel to the base show that no increase occurred. The curve of demand for agricultural products progresses steadily upward and at an increasingly steeper inclination with the passing of time as it approaches the present day, thus indicating the accelerated rate at which the demand for the state's farm products has continued to grow.

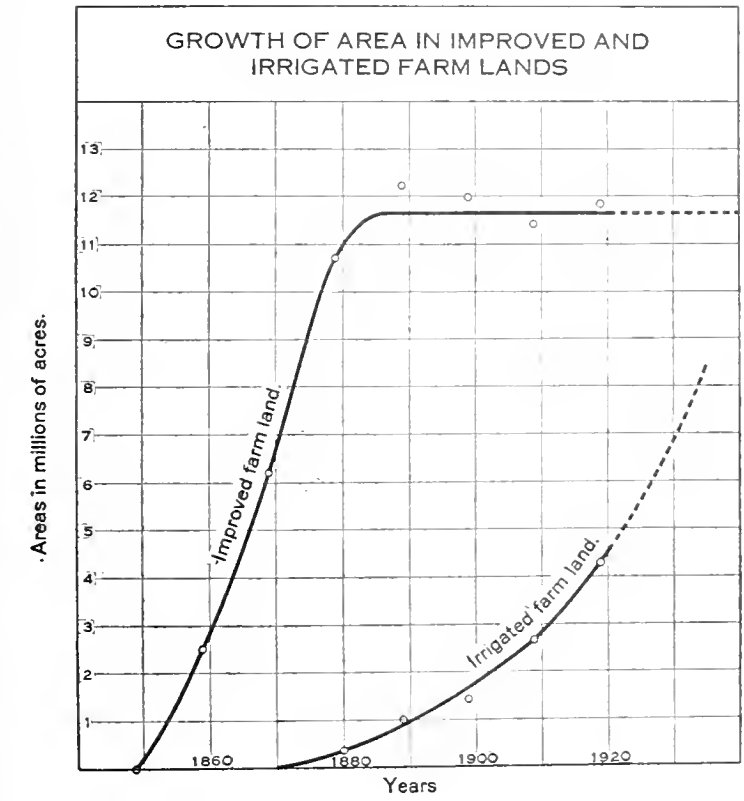
The increasing demand for California's agricultural products that occurred prior to 1870, was satisfied by dry farming additional areas of land each succeeding year. The curve expressing the expansion of the improved area in farms, shows that this extension of area continued up to the year 1885. At this time the curve turns and becomes parallel to the base. This indicates that there has been no increase in the area of the total land under cultivation since that date.

[1]Twelve million out of twenty-three million, or 52 per cent. Fourteenth U. S. Census, 1920.

[2]U. S. Census Reports.

Plate I.





EXPANSION OF AGRICULTURAL INDUSTRY IN CALIFORNIA

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER [illegible]—1921 STATUTES

With 23,000,000 acres of arable land in the state, the extension of agriculture to new lands stopped at 12,000,000 acres. Since the demand for the products of the agriculturist continued to increase, and at an accelerated rate after the expansion of the farming area had ceased, every circumstance and condition existed for the continuance of the extension of agriculture to new areas if it were possible. As a result of the unprofitable farming conditions obtaining on the remaining uncropped 11,000,000 acres, the area under cultivation did not further increase. The experience of the practical agriculturist limited the total area farmed to 12,000,000 acres. Statistics presented later in this report indicate that with the 12,000,000 acres cultivated, all of the state's agricultural area with sufficient natural moisture to mature a profitable crop had been brought into use, together with some additional area having inadequate natural moisture, but for which accessory supplies were developed economically.

After 1885, with the demand for California's agricultural products constantly increasing, the state had no additional area that could be profitably utilized for agriculture. In response to the continuing favorable market, a more intensive farming of the land already under cultivation resulted; for California, favorably situated, its fertile agricultural soil not producing to capacity under dry farming conditions, required only that additional water be applied to these lands to multiply the yield. The practical farmer, responding to the market created for his products by the ever-growing demand, increased the yield of each acre by supplementing the soil's natural moisture with water applied through irrigation. The increase in the area irrigated in the years succeeding 1885, after the increasing demand for the state's farm products could be no longer satisfied by enlargement of the farmed area, is depicted on Plate I[1]. Although starting in 1870, the area irrigated did not increase very rapidly until the years following 1885. This curve of irrigated area and the curve of demand for agricultural products closely conform in shape. The similarity of these curvatures in the succeeding years, expresses the dependency of agriculture upon irrigation and the effect of irrigation in augmenting the yield to a production commensurate with demand; for California's lands, potent in possibilities, needed only the accessory moisture that irrigation supplied to enhance their yield that the state might respond to the demand for its products. The upwardly directed paths of both the demand curve and the curve of irrigated area, ascending with greatly increased steepness as they approach the present day, show that still more intensive farming must be practiced in the future and that the irrigated area must expand at a still greater rate than in the past, or the state's progress will be retarded through agricultural production failing to meet the demand.

Through the state's response to the demand for its agricultural products by the more intensive farming of its rich agricultural lands; and because of the introduction of irrigation and the continued extension of this practice, it has come about that California, eighteenth in the area of land farmed among the states of the Union, but with favorable climate and fertile soil, is in the fifth[2] position in value of farm crops.

[1] "Expansion of Agricultural Industry in California."
[2] Fourteenth U. S. Census, 1920.

CHAPTER II.

CLIMATOLOGY.

The California year is distinctive in having but two well-defined seasons, summer and winter. This feature arises from the transitional periods, spring and autumn, being short and devoid of distinguishing features other than that they are intermediate between the more clearly defined seasons of summer and winter. The summer, or growing period, is long, warm and generally rainless; the winter is the dormant period, or the interval of retarded growth in plant life in the annual cycle, and is normally short, cool, and at times stormy. Most of the precipitation occurs during this season of winter.

The mountains and the proximity of the thousand mile coast line of the Pacific Ocean, modify California's climate so that only moderate seasonal fluctuations of temperature occur over most of the state. Any great extremes of heat and cold that do occur, are confined principally to the non-agricultural areas of the mountains and deserts of the state. For California generally, the mean summer temperatures and mean for the winter show a less departure from that of the entire yearly temperatures than do similarly compared mean heat measurements for the states adjoining California, or those located eastward and included in the same latitude.

The seasonal fluctuations of temperature, the duration of periods of heat and cold, and the extremes of temperature reached in the daily and yearly cycle, all have an effect on plant life. Agricultural plants require appreciable intervals of favorable growing temperature that they may attain to mature growth and reach an annual harvest bearing stage. This growing period must necessarily be continuous and for the greater number of agricultural plants, the growing season must be exempt from freezing weather or long continued chilling cold. Growing plants generally can withstand temperatures slightly below freezing for short intervals without serious consequences, except that a few degrees of frost, even for short periods, is damaging to tender plants when they are passing through critical stages of growth, as budding, blooming or setting of fruit. Dormant plants can withstand varying degrees of cold, ranging from six to seven degrees below freezing for an hour or so for orange trees, to fifty degrees below freezing for mature grape vines.

Although the frost-free period, which is the time when temperatures are continuously above freezing, is known as the growing period, most crops will make little if any growth on days when the average daily temperature is below 43 degrees and because of the variations that take place in the daily temperatures between noontime warmth and the cooler nights, the first month of the growing season is usually that month in which the mean temperature is above 49 degrees.

The mean monthly precipitation and temperature, as well as frost-free periods for sixteen illustrative towns located in these agricultural sections, is graphically presented on Plate III. "Illustrative Clima-

tology of Agricultural Lands."[1] The upper section of this plate shows, by colored bars drawn upwardly from the base line, the mean monthly precipitation that has occurred at the Weather Bureau's station located in the town shown below the foot of the bar. These bars in intercepting the cross lines give the mean monthly precipitation in inches of depth. The longer lengths of these upwardly directed bars indicate that greater rainfall has taken place at these stations, the shorter lengths that the precipitation has been less. The middle section of Plate III[2] represents, by similarly colored bars, the mean monthly temperatures that have prevailed during the period of record at the same Weather Bureau stations. In a like manner, the longer bars show higher mean monthly temperatures, and the shorter bars that the temperatures have been less. The lower section, designated "Frost-Free Period," has transverse bars of like color opposite the names of the Weather Bureau stations, and gives a pictorial representation of the absolute frost-free period by means of solid colored bars. The shading lines, cross drawn in like colors and extending from the extremities of the solid bars, show within the limits of the extreme ends the average frost-free period that has obtained at these stations during the years of record.

These bars, one to a town in each of sixteen sections of the state and covering every month in the year, illustrate in a graphical way the main climatic characteristics of the state's agricultural lands. The location of the towns and the agricultural lands is presented with other data on Plate V, "Map of Agricultural Areas and Duty of Water Sections."

Illustrative of the climate in their respective sections shown on this map, the bars on Plate III[2] show that almost without exception the precipitation, in amounts to be of much value to agriculture, is confined to the months of November, December, January, February and March, while the period of favorable growing temperature is from March to November, inclusive. During this nine-month period, with the exception of March and November, the rainfall is negligible at almost all the stations of record, and the only supply of water available to the growing plant is the moisture stored in the soil from the winter rains. With plant growth started, some time is consumed before additional waters, above that stored in the soil, are required. In localities where the natural rainfall is inadequate or does not occur in sufficient amounts at the needed times, and where other methods of watering are used, the first month during which these additional waters are required is that during which the mean temperature is above 52 degrees. However, with all other elements of climate favorable to agriculture, by the utilization of the soil's natural moisture stored from the rains of the previous winter and supplemented by the light spring rains, although deficient, harvestable crops of limited varieties have been successfully grown over a large portion of California's farming lands. In localities where rains adequate for dry farming, occurred with sufficient regularity in succeeding years, the venture was profitable; but the limits to the agricultural industry of California, when conducted without a supplementary supply of water for the growing plants during the long dry summer period, was reached about the year 1885.

[1] Data from records of the U. S. Weather Bureau.
[2] "Illustrative Climatology of Agricultural Lands."

Although the successful farming of the past has demonstrated that crops may be grown and that plants will endure the moisture deficiencies of the summer period, the experiences recorded on Plate I,[1] and the climatological data of Plate III,[2] are convincing that the agricultural areas of California can not produce to the full advantage of the rich soils and favorable climate of the state without an increase in the supply of moisture during the growing season over that supplied by the meagre summer rains and the holdover moisture in the soil from the winter season. To attain maximum productivity on agricultural lands in all parts of the state, it is clearly necessary to supplement the natural moisture of the soils by applying accessory waters to the growing crop during the summer season. In practice this is called irrigation. It consists of the diversion of water from a lake or flowing stream, or pumping from underground waters, and the conveyance and application of this water to the soils in the agricultural areas. It is this utilization of precipitation that has fallen on other than cropped areas, the collecting, conveying and applying of such waters to the tillable soil and the growing crops, that constitutes our science of irrigation.

Three-fifths of the area of the state is occupied by lands that are non-agricultural, but useful for the collecting of precipitation to supplement the deficient natural moisture of the agricultural lands. Higher in elevation, precipitation falls in greater abundance on these mountainous lands. While the valleys in which the agricultural lands of the state lie, for the most part receive between five and twenty inches in depth of rainfall per year, a depth of over twenty inches is mostly confined to the mountainous areas. The annual quantity also varies, in general, increasing from south to north, from little more than zero in the Imperial Valley near the Mexican boundary, to 100 inches or more per year in the north coastal areas close to the Oregon line.

In the localities of lesser rainfall, irrigation is absolutely essential to the production of crops. In the localities of greater rainfall, irrigation would be unnecessary if the total precipitation were distributed uniformly throughout the year. Even in these areas, the natural soil-moisture is insufficient and is either exhausted or so greatly reduced early in the summer that irrigation becomes commercially profitable. The increased productivity occasioned by an adequate supply of soil-moisture, yields returns greatly exceeding the costs of accessory water to obtain it. The greater certainty of maturing the crops and the increased yield under irrigation, make an accessory supply a necessity for maximum production in every section of the state. On no occasion where waters have been conveyed, distributed and applied to growing crops have the results not been definitely and decisively conclusive that the application of waters periodically and in proper amounts, to the cropped area, has assured a greater yield and a better product.

The distribution of precipitation over the state is exhibited in graphical form on an isohyetose map, which shows how rainfall varies with locality. On this rainfall map, presented as Plate IV, "Isohyetose Map of California," points of equal mean annual precipitation are connected by lines passing through them. Every obtainable measurement of rainfall made in the state, comprising the records of 728 observation

[1] "Expansion of Agricultural Industry in California."
[2] "Illustrative Climatology of Agricultural Lands."

stations, has been collected and utilized in the preparation of this isohyetose map. Locations of these observation stations and places of record are shown by symbols on the map. The number adjacent to each symbol marking the location of the station, refers to Table 4, "Precipitation Data Used in Constructing Isohyetose Map," in which is tabulated the data from which the map was prepared. Table 5, "Precipitation Stations Used in Constructing Isohyetose Map," lists the rainfall stations in the alphabetical order of their names and carries opposite each name, a number by which the station is designated on the map and in Table 4.

The mean annual precipitation, which has been pictured on the isohyetose map, is either the observed or it is the estimated average annual rainfall for the fifty-year period that has just been concluded. Comparatively few of the rainfall stations have records covering this half century. However, in the instances where they did not, the record of the years of actual measurement was extended to complete the record of the precipitation for the fifty-year period, through comparison with the chronicles of adjacent stations that had more extensive records. For this expansion, so necessary to make fuller records available for the interpretation of the sequence and predominant features of annual precipitation through long periods, use was made of factors called "indices[2] of wetness." These indices give numerical value to the relation that exists between the wetness of one year and the wetness of another. Wetness varies for different years in the amounts of rain falling and a ratio is obtainable that expresses this wetness for one year in terms of another year. This index for any one year is the ratio of the wetness or annual precipitation for that year, to the average precipitation for the fifty-year period. These indices or ratios form a series, each one typical of a successive year, and have a relation, one with another, identical with the actual values of the annual rainfall. Table 4[1] tabulates the data of the years for which rainfall measurements were made at each station, and the average rainfall for that period. This average for the years of measurement at each of the stations of short record, was increased or decreased to obtain the estimated mean for the fifty-year period. The increment added or amount subtracted was the proportional quantity that was required to change the average of the indices of wetness, for the years of measured rainfall, to the average of the indices for the fifty-year period.

This isohyetose map shows the general tendency toward greater precipitation in the higher mountain regions where a depth of more than 70 inches is reached near the northern summits of the Coast Range. The elevated peaks and tablelands of the western slope of the Sierra Nevada Mountains receive a mean precipitation of from 50 to 90 inches compared to depths of from 5 to 25 inches occurring in the valley between the two ranges. It is also discernible on this map that the rainfall over the extensive and continuous areas of agricultural land in the San Joaquin and Sacramento valleys, is less in depth and more uniform than over the mountainous area. While the precipitation

[1] "Precipitation Data Used in Constructing Isohyetose Map."

[2] These indices are developed for every division of the state from the records of two hundred and sixty stations of the United States Weather Bureau, and are presented as a part of Appendix "A," to this report, "Flow in California Streams," Bul. No. 5, State Department of Public Works.

varies from 1 to 100 inches in depth over the state, this great valley in the center of the state, containing the bulk of California's agricultural land, receives 15 to 25 inches in the north half, and the south half receives only 5 to 15 inches. South of Tehachapi Pass, the southern California coastal valleys, lying to the west of the dividing range, have a rainfall of from 9 to 15 inches a year. On the eastern side of this mountain range, dividing the coastal plains from the desert, lies a great expanse of territory, one-fifth of the total area of the state, which receives less than 5 inches of rainfall per annum. To the north and along the eastern border of the state, the mountain valleys lying east of the Sierra Nevadas and south of Lake Tahoe, have a mean precipitation of from 5 to 25 inches; those north of Lake Tahoe and on the mountain plateaus east of Mount Shasta, receive from 10 to 20 inches per year. Along the western border of the state, on the Pacific slope of the Coast Range Mountains, the agricultural valleys north of Cape Mendocino and west of Mount Shasta, have a precipitation of from 20 to 75 inches; the valleys from Mendocino Cape to San Francisco Bay, receive from 20 to 50 inches per year. The valleys on this same slope, between San Francisco Bay and the Santa Barbara Channel, have a rainfall that varies in depth from 10 to 25 inches per annum.

The annual precipitation on all these areas varies greatly from year to year. Long continued records of rainfall give, when averaged, a mean depth of annual precipitation which shows the quantity of water that should be expected to fall in any one year; but the precipitation actually occurring may depart widely from the average computed from full records covering extensive periods of time. The precipitation in any year may be expected to occur in depths exceeding or falling short of the fifty-year mean with equal likelihood, except that wet and dry years appear in the record by groups. Records and information have not been accumulated for a sufficiently long time to determine the sequence with which these groups of wet or dry years may occur, the number of years in a group, or the widest departures from the mean annual rainfall that may be expected to take place in any year. So far as human experience carries, the longer records of a half century or more, probably contain the extremes which might ordinarily be expected. Precipitation for any one year may for this reason have a wide variation from the mean, but with the passing of time, the departures tend to equalize, effects of wide variation are suppressed, and the mean annual precipitation of the past gives the most probable depth of precipitation that may be expected to occur in the future.

Adequate precipitation desirably distributed, propitious temperature, and fertile soil, combine to make abundantly productive agricultural localities that yield generous harvests to human effort. California's farm lands, favorably located and possessing naturally all these requisites but a rainfall commensurate in amount and fittingly distributed, require that accessory water be applied to the cropped soil during the long growing season to attain maximum productivity.

CHAPTER III.

DUTY OF WATER FOR IRRIGATION.

Plant life and the physiological processes taking place in the vegetable structure through which the seed germinates, maintains its life and grows to maturity, is one of absorption, transformation and storage in its cells, of materials available to it from its environs. Plant life requires sunshine, moisture, and mineral and organic food for normal physiological functioning in sustaining life and for nourishing it to mature growth. Rooted in place, plants have at their command only such of these elementary necessities as are naturally about them or are conveyed to them by the hand of man.

Dependent upon the resources of their immediate surroundings, without means of effecting their own relief during adversity, plants are of necessity, hardy and tenacious of life and do not succumb except to very unfavorable circumstances or long endured privations. Distributed around the earth and through all latitudes, the plant organism has shown by its distribution and the diverse conditions under which it prospers, a remarkable facility in adapting itself to unpropitious environments. In such regions, growth is slow and plant products are scanty, but with the introduction of advantageous factors into the surroundings or on transplanting into more favorable localities, the plant responds with more luxuriant growth and abundant fruits. Because of this facile adaptability to environment, the plant requirements for any one of its elemental necessities, sunshine, moisture, or food supply, are as variable as the numerous combinations of circumstances under which they are accustomed to mature.

Moisture is required, however, by growing plants in far greater quantities than mineral and organic foods, for in addition to its incorporation into the cell structure of the plant, there is a large amount evaporated from all the surfaces of the stalks and leaves that are exposed to the atmosphere. The root system of the plant extracts moisture from the surrounding soil and takes it into the plant structure to supply this two-fold need for water; that required for incorporation into the cells and framework, and that portion which evaporates from the exposed surfaces during the physiological process of transpiration. The quantity of water needed for these purposes is large, but varies greatly with the different varieties of plants as well as with the circumstances of their surroundings. The moisture utilized by the plant for incorporation into its structure and product, varies from 10 per cent of its total weight in grain, to 80 per cent in tuber crops and 90 per cent in fruits. Of all the moisture absorbed by the root system, however, that incorporated into the structure of the plant is but a very small part. Much the larger portion is evaporated to the atmosphere from the leaves and other exposed surfaces of the plant. The type of plant and the conditions under which it grows, especially the fertility and tilth of the soil, cause this quantity to fluctuate between wide limits.

Greater quantities are also evaporated when the supply of soil moisture is more abundant.

Much scientific effort has been expended to determine the minimum quantity of water required to bring plants of various agricultural types to an harvestable maturity. The moisture transpired during the epoch of plant growth from germination to harvest, in fluctuating with all the circumstances of the environment, is so variable, however, that the experimentors have produced a variety of figures differing from each other by several hundred per cent.

The total moisture required to make the environment favorable, is greater in volume than the minimum quantities actually used in plant growth. Water in the interstices of the soil is drawn by gravity and capillary attraction, and portions are removed by these forces beyond the reach of the plant roots The moisture carried by gravity to greater depths, as well as that drawn to the ground surface by the capillary powers of the soil to be dissipated through evaporation, are alike lost to the plant. That the environment be favorable for plant growth, there must be ample moisture in the soil to supply the actual amount required for absorption into the plant structure by its root system, after portions have been removed from the reach of the root system by the continually acting and unavoidable natural attractions of gravity and capillarity. The total amount of water that can be stored in the pores of the soil at any one time is quite limited. While pore space in soils varies from a third to half its volume, not more than one-half of this pore space can be occupied by water for any considerable period of time without detriment to plant growth. Plants require air in the soil as well as moisture to effect the chemical and bacteriological processes concurrent with the abstraction of their nourishment from the soil, and if the pore space of the soil is too filled with water, air will be excluded or will not be present in sufficient quantity for plant needs. Without sufficient air in its pores, the soil takes on a condition called "sour," which is commonly known to be unfavorable to plant growth. The most favorable conditions for plant growth require that moisture be supplied to the soil of cropped areas at intervals and in quantities less than the maximum that the soil will absorb. With applications made in this manner, the supply in storage in the pores of the soil, is never much above or much below an amount that is most favorable to plant growth. The natural replenishment of the soil moisture through rainfall, as the climatological data shows, occurs in the dormant period of plant life, or during the early part of the growing season. To replenish soil moisture during the growing season requires a supply accessory to that of nature.

The amount of water required of the accessory supply and the frequency of replenishment, concern not alone that needed for absorption by the plant and the quantity that is removed from the proximity of the plant roots by gravity and capillarity, but also an additional quantity. From the very point at which these accessory waters are taken from their natural location, into conduits for conveyance to the place of use, throughout this entire course, losses occur. Seepage into the earthen banks confining the waters, leakage through walls and joints of constructed channels and passages, and percolation to the sub-

soil, are quantities varying in amount and are often unavoidable or impractical to prevent economically. With the pouring of the waters on to the cropped soil, a further portion of the water is dissipated. The long ribbons of furrow-confined waters of slight depth, or the extensive and shallow sheet of water flooding the ground surface when the irrigation waters are disposed upon the cropped area, and the large expanse of wetted soil, give unexcelled opportunities for evaporation to the atmosphere both during and after the spreading of the waters, and a great deal of water is so dissipated. In localities of porous soils and free drainage through subsoil, much water may percolate immediately to depths beyond the reach of plant roots in those parts first wetted, even before the spreading waters have made their way to the borders of the field. The loss of water involved in the pouring out and spreading of the accessory waters upon the cropped land is great or small, depending upon many circumstances, most of which are controllable by man. The manner of spreading the waters, the time required to wet the field, and the proficiency displayed in application, restrain the wayward waters to more or less beneficial purposes. With the greater or less expenditure for leakless conduits to convey the water to the point of use, and for preparing the fields and making provision for a quicker and more even spreading of the water, the diffusion losses that serve no useful purpose, and take place when applying the irrigation waters to the land, may be made smaller or larger. Other circumstances beyond the control of man affect the magnitude of these losses, but to a lesser degree. The type of soil, its variation throughout the field and its dryness at the time of irrigation, the freedom of drainage through the subsoil, the local climate and weather conditions prevailing at the time of irrigation, all tend to enhance or lessen the diffusion losses, but do not control their essential magnitude. For the effect of these elements, in increasing the proportion of water lost before serving any useful purpose, may be largely offset by the expenditure of money to conserve the water, by providing watertight conduits for conveying the waters over the ground and through the fields to its place of emission for use, for retaining the waters for beneficial service, for guarding it from leakage and evaporation, and for delivering it undiminished to the zone of the plant roots. The economics of irrigation and agricultural production are thus the determining factors in coping with application losses; to conserve or to permit waste, expenditure is balanced against returns, the value of water, the value of the crop; and the margin of profit decides. The losses occurring in the application of irrigation waters may equal half the total water spread upon the land. The practical working quantity of water required of an accessory supply, to furnish adequate supplementary moisture for growing plants must include sufficient to provide for all these various amounts dissipated as the water flows from its natural source through man-made channels, pipes and conduits, and pours out upon the soil, and before any is incorporated in the structure of the plant and product.

This practical working quantity, by which the needs of cropped areas may be expressed and water requirements of localities may be compared, is the greatest utility when expressed as the amount of water needed for a unit area of cropped land. The "Duty of Water"

is the name used for this practical working quantity of water. Originally an expression for the area of land that a measure of water would irrigate, flowing continuously through the irrigation season, custom has inverted the first meaning and more conveniently utilizes the term "Duty of Water" to name the quantity of irrigation water required to furnish an adequate supplementary supply to the soil moisture throughout one season on a unit area of land. This quantity is usually expressed as feet of depth on the land, meaning the depth that the total amount of water required for one acre in one year would cover its surface if it were all accumulated and confined above the surface of that acre. Conventional use has resulted in dropping the unit of area, the acre; and of time, the year; and these are now implicitly contained in the phrase "Duty of Water."

Qualifying terms are in common use, such as "Net" and "Gross." "Net Duty" is the quantity of water measured at the point nearest to its entry and spreading out upon the cropped land. It thus contains the water required for plant growth, together with the spreading or application losses and the losses contingent to storage of moisture in soils prior to being absorbed by the plant roots. The "Gross Duty" is this same quantity of water in lake or flowing stream, reservoir or place of storage, together with the conveyance losses incident to its flow from point of first diversion from its natural source, along the canals and through the channels and conduits to its point of entry on to the cropped soil. "Net Duty" of water is best adapted to considerations of requirements of accessory water supplies and in comparing the needs of different localities. "Gross Duty" is a subject of consideration in canal and conduit design and initial diversion quantities.

The net duty of water may be studied through the amounts of water actually used in irrigation practice and the circumstances contingent to its use. The use of water on different fields varies widely even for like crops, for not only do the quantities that are dissipated in the process of irrigation change greatly with contingent circumstances, but the actual quantity necessary for absorption by the root system of the plant is also conditional. These circumstances and conditions that necessitate the application of more or less accessory water, are so vast in number, changing with every variation of soil, crop and preparation for spreading water, that on small tracts the effect of one may predominate, but on greater areas they tend to neutralize in effect. For this reason the average use of water on very large areas approaches like figures, while the use on small tracts has wide numerical departures from the average. The larger the areas compared, usually the closer agreement in the records of use.

CHAPTER IV.

MONTHLY IRRIGATION DEMAND.

Agricultural plants are able to exist and propagate their species in extremely adverse surroundings, and when deprivation and adversity are their destiny, devote their reserve capacity and utilize their resourcefulness to the utmost in the maintenance of life and the perpetuation of their kind. Moisture, most essential of plant foods, is necessary in large quantities that the environment be auspicious, and when denied the plant, its surroundings are ill-favored to its continued well-being, vegetable growth is slow and stunted, and fruits are dwarfed in size and scant in number. From the plant seed awaiting moisture and favorable temperature to germinate and send forth its first tiny tendrils, to the sturdy mature plant entering harvest stage loaded with plentiful fruits, plant life is most responsive to adequate moisture properly applied. Too much moisture, too long continued, excludes air from the pores of the soil and plant life requiring this air, together with the moisture, is impeded in its growth. Inadequate moisture or long-continued drought are equally unfavorable, for the plant is required to conserve its resources that it may even continue to exist, and this is done at the expense of growth and greater yield. It is the yield, the production of fruits in great number and excellence, that is first affected by moisture supply undesirable in amount or not fittingly distributed. Since all plants of agricultural type are without capacity to store moisture within their structure for use during periods of short supply, their reaction to adversity requires, and the economics of agriculture demand, that favorable conditions of soil moisture be maintained throughout the growing season.

The periodic application of accessory water is therefore essential and the demand for irrigation water follows closely upon the prevalence of the seasonal temperatures of appropriate warmth, favorable to the growth of plants. The moisture in the soil from the winter rains is usually not retained in sufficient quantities to make conditions propitious for vegetable growth long after the growing season opens. The spring rains, when they occur, are seldom adequate in amount to much more than wet the ground surface. Such moisture is available principally for shallow rooted plants and only in the requisite abundance during the rather brief period preceding the drying of the ground surface that occurs through evaporation.

In general, the demand for irrigation water increases as the season progresses and temperatures become higher. Water requirements usually reach their peak in midsummer, during the months of July and August, when the temperatures are greatest and the dissipation of the accessory supply, through evaporation and percolation, is a maximum. As the season further progresses and temperatures become lower, the demand usually becomes less and ceases altogether with the termination of the growing season. The crops grown in any locality

influence the distribution of the demand for irrigation waters through the season, affecting the frequency with which exactions are made upon the accessory supply and the amounts demanded, and these water-needs give characteristic variations from these general considerations. According to their developed habits, agricultural plants spring from the dormant life of the winter period or evolve from the latent life of the seed, starting from quiescence at various times during the advancing and unfolding of the growth-stimulating weather of the summer season. The time required to mature the plant from the instant life first stirs in the seedling, or from the initial appearance of vitality in the dormant rooted-plant, to harvest laden stage, differs with the many crops from about sixty days, to the entire growing season. As a consequence, the demand for irrigation water varies with the needs of different crops that are grown. In extensive agricultural districts the proportional areas planted to crops of the several kinds may differ and water requirements be affected likewise.

Due to the variable stream flow that occurs during the season, irrigation use of the past has conformed to a considerable extent with the availability of water in the streams. During the spring, while the supply in the stream channels is ample, an excessive amount of water has often been applied to the cropped land in anticipation of the shortage to come in the latter part of the season. With a short supply in the latter part of the season, the past use has been generally less than the desirable amount. The distribution of the use of irrigation water, in both frequency and amount, as recorded in the measurements on various systems, does not always, therefore, represent the demand under conditions of a favorable supply.

CHAPTER V.

IRRIGATION REQUIREMENTS OF AGRICULTURAL LANDS.

The quantity of water adequate for supporting a growing crop to an harvestable maturity, intrinsically a variable, small in the amount actually incorporated into the plant structure and its products, large in the amount dissipated in supplying the plant needs, may best be derived from the results of experience and practice. California's agricultural lands, deficient in natural moisture, and requiring the application of accessory water through irrigation to produce the luxuriant growth and abundance of fruit which their propitious climate and responsive soil make possible, have received varying quantities of water. The amount applied on the sundry tracts in the various localities, differs widely with all the circumstances and conditions affecting the use of water. From the average use of water obtaining over large areas, sufficiently great to suppress the predominance of effects peculiar to small parcels; natural divisions of the state, sixteen in number, were evolved, called duty of water sections. These sections comprise within their boundaries lands of approximately like geographical position, similar surface conformation, of analagous economic environment, and equal climate, and they form convenient segregations for the disclosure of the irrigation requirements of California's agricultural lands. Delineated on Plate V,[1] the section boundaries show as red lines following natural dividing conformations, and the agricultural lands show as light green areas within the delimiting red lines. Letters within circles, shown interspersed throughout the green areas on the map, give the location of individual irrigation systems or of divers tracts of land for which data have been collected on actual use of water and on proposed uses. A searching inquiry covering the accumulated records of California's use of water has been completed. Comprehensively planned, it includes all procurable measurements, and, containing a preponderance of information, it results in practical values on the irrigation requirements of California's agricultural lands. These accumulated records are the summation of the labors of innumerable engineers and hydrographers, and cover the major portion of the past two decades. The water measurements, both net and gross, were taken over an area that equals more than half the lands irrigated in the State of California in 1919. The records of monthly use of the yearly supply apply to an equally great area of land and for an interval of time that is equivalent to a consecutive period of over five years.

The net amount of water applied on an average area of 2,210,000 acres of land for an average of three and eighth-tenths years, supplemented by one and nine-tenths years of record on ten systems of indeterminate acreage, has been assembled in Table 8, "Use of Water as Measured on Various Systems," together with the crops grown and the distribution of the water used through the months of the year. Also included in Table 8, are one hundred sixty-nine proposals on net use of water for one hundred and nine projects scattered over the state.

[1] "Map of Agricultural Areas and Duty of Water Sections."

The monthly use of water comprises the records obtained on an average area of 2,660,000 acres for an average of five and six-tenths years, plus two and four-tenths years of record on forty-six systems of indeterminate acreage, and fifty proposals covering twenty-eight projects.

The gross use of water on California's agricultural lands are the records of an average area of 2,690,000 acres for an average of seven and one-half years, together with two and one-tenth years of record on ten systems of an indeterminate acreage, and supplemented by one hundred and nine proposals for seventy-six projects.

The tracts of land on areas within irrigation systems for which measurements were obtained, are arranged in the table in groups as they lie within the confines of the duty of water sections. Each entry in this table is symbolized by a letter which indicates the position occupied on the map by this land within the duty of water section. For convenience of reference, Table 7, "Index by Sections and Key Letters on Map, Plate V, to Systems Listed in Tables 8 and 9 on Use of Water," lists the irrigation systems in the order of the duty of water section and letter symbol of geographic position within the section. Table 6, "Aphabetical Index to Irrigation Systems Listed in Tables 8 and 9 on Use of Water," presents the irrigation systems in the alphabetical order of their name.

The letter symbols of geographic position also appear on Plate VI, "Net Use of Water as Measured and Proposed on Various Systems," on which is graphically presented all the information collected on the net annual use of water. On this plate, arranged by duty of water section and spread in rows, are upright bars, solid black in color, and resting on common base lines. These upwardly drawn bars indicate by their height above the base line, the amount of irrigation water that was spread upon the lands of the system named below the base of the bar. Geographic location is symbolized by the circled letter above the bar, and approximated by the name of a nearby town which is above the rows of bars. The year of the measured use is placed under the base line at the foot of the bar.

The amount of water used is expressed in feet of depth on the land, as though all the water applied during the entire season were accumulated and confined at one time above the surface of the lands irrigated. The upright bars, representing these average depths, by intercepting tan colored lines, drawn cross-wise and parallel to each other, indicate the depths in feet. The bars have varying widths which approximate the area of land watered on the system for which the bar stands. The narrowest bars apply to areas of a thousand acres or less and the widest bars to greater areas, progressing by graded steps to the broadest bar standing for two hundred thousand acres or more. Unless otherwise specified close above the bars, the general crops of the locality were grown on the lands irrigated, and without unusual predominance of any one variety.

Intermingling with the black bars on Plate VI,[1] are similarly disposed bars of a tan color, which are so distinguished to represent proposed uses of water. These proposed uses are the estimates of irrigation engineers whose names are given adjacent to the bars. These estimates have been prepared in reporting on new projects and are

[1] "Net Use of Water as Measured and Proposed on Various Systems."

quantities of water believed to be adequate for the maturing of harvestable crops. Reported by engineers after examining and studying the locality, they are determinations of the net volume of accessory waters which need be procured for the lands. These quantities are distinguished from those represented by the black bars in being estimates of water required, rather than measurements of actual use. The data for drawing the tan colored bars were obtained from Table 9, "Use of Water as Proposed for Various Localities," which contains all the information on the use of water, as proposed by various investigators, collected in the statewide search. The indexes to Tables 6[1] and 7[2] include the entries in Table 9. The data on the proposed use of water may be traced in Table 6[1] by the alphabetical arrangement of the names of the irrigation projects. This proposed use-of-water data may also be located in Table 7[2] by using the duty of water section number in which the project lies, together with the letter symbol indicating its position within the section. The extensive amount of information collected on the use of water, both measured and proposed, is presented summarized in Table 10, "Summary of Use and Duty of Water by Sixteen Sections of the State," with the average figures tabulated section by section, for the sixteen duty of water sections of the state. That the duty of water for each of the several sections might be derived from this great assemblage of information, an examination of circumstances and close scrutiny of the conditions surrounding the use of water in each section, was made. All information on the surface conformation, types and fertility of soils, crops grown, prevailing climate, the water supply, and all other related subjects pertinent to irrigation requirements, was reviewed and analyzed, together with the measured uses of water, that the water needs of each section might be disclosed through the values found for the duty of water. The values found for this agricultural need of supplementary water, together with the areas[3] of farm land enclosed within each section are set down in Table 1, "Agricultural Area and Net Duty of Water in the Sixteen Sections of California, shown on Plate V," and also in Table 10[4]. These values are also indicated in red on the Map, Plate V[5], near the center of each section. On Plate VI[6], these duties of water are represented by red cross lines, parallel to and at a height above the base line proportional to the net duties. For comparison with these red lines representing duties of water, dotted black cross-lines are also presented. The black lines are the net average depth of water used on all the land comprised within the systems and for which measurements are tabulated in Table 8[7]. The dotted-tan colored cross lines are the proposed net depth of water, averaged for the land comprised within the systems for which proposals were made. They are tabulated in Table 9[8].

[1]"Alphabetical Index to Irrigation Systems Listed in Tables 8 and 9 on Use of Water."

[2]"Index by Sections and Key Letters on Map, Plate V, to Systems Listed in Tables 8 and 9 on Use of Water."

[3]Areas under irrigation in 1920 obtained from survey made by Irrigation Investigations, United States Department of Agriculture, in cooperation with the then State Department of Engineering.

[4]"Summary of Use and Duty of Water by Sixteen Sections of the State."

[5]"Map of Agricultural Areas and Duty of Water Sections."

[6]"Net Use of Water as Measured and Proposed on Various Systems."

[7]"Use of Water as Measured on Various Systems."

[8]"Use of Water as Proposed for Various Localities."

TABLE 1. AGRICULTURAL AREAS AND NET DUTY OF WATER

in sixteen sections of California, shown on Plate V.

Section number.	Description of section.	Agricultural area.	Net duty of water.
		Acres.	Feet depth on land.
1	Los Angeles area, Ventura to Redlands	1,310,000	1 75
2	San Diego area, Mexican boundary to San Jacinto and Yucaipa	984,000	1 25
3	Imperial, Coachella and Palo Verde valleys	1,299,000	3 00
4	Antelope Valley and Mojave River areas	1,107,000	2 00
5	Inyo-Kern, Owens and Mono valleys	657,000	2 50
6	Sierra foothills and rolling plains east and south of San Joaquin Valley floor	1,800,000	1 75
7	San Joaquin Valley floor	5,468,000	2 00
8	Western slope of southern San Joaquin Valley	971,000	1 75
9	Santa Barbara, Santa Maria and San Luis Obispo areas	410,000	1 50
10	Salinas and contiguous valleys	296,000	1 75
11	Santa Clara and adjacent valley areas	530,000	1 50
12	Delta lands of San Joaquin and Sacramento valleys	453,000	1.50
13	Sacramento Valley floor	2,694,000	2 25
14	Sierra foothills, and rolling plains east and west of Sacramento Valley floor	2,305,000	1.50
15	North coast area	624,000	1 25
16	Northeastern mountain-valley and plateau areas	1,598,000	1 75
	Total	22,506,000	.....

The circumstances and conditions surrounding the use or water in each section through which the duty of water has been found, is set forth section by section in Table 11, "Illustrative Climatological Data for Agricultural Lands by Sixteen Sections of the State," and also in the accompanying summary. This table and summary also contain material and pertinent facts that were of assistance in disclosing the desirable distribution through the year of the annual irrigation supply, for each of the sixteen sections. This desirable distribution, as well as the duty of water, was sought in the measurements of the monthly use of water as found recorded in Table 8[1], and in the proposed monthly use of water on the projects listed in Table 9[2]. The black bars, upwardly drawn from a common base line shown on Plate VII, "Monthly Use of Annual Irrigation Supply," pictures the average portions of the annual supply used in each month of the year, section by section. The height of these black bars, by intercepting the tan colored cross lines, indicate the fractional part used in that month, of the total use for the year. They are expressed in per cent for the successive months and cover the projects for which measurements are noted in Table 8[1]. Intermingled with these black bars are tan colored bars also upright, whose height, in likewise intercepting the tan colored cross lines, gives the average of proposed uses of water within the section, in the same terms as the black bars. The values found for the desirable monthly distribution of the annual supply through consideration of these data, is depicted graphically on Plate VII by a red line drawn step by step and from month to month for each of the sixteen sections. This red line, expressed in the same terms as the black and tan bars, mounts to heights above the base, in each succeeding month to indicate by its position, the portion of the annual supply which it is desirable to use in that month. The values found are also printed in Table 2, "Desirable Monthly Distribution of Annual Supply According to Duty of Water in Sixteen Sections of California, shown on Plate V."

The data establishing the average annual net duty of water and the desirable portion to be used each month for the sixteen sections of the state have been largely presented on Plates III to VII, inclusive, and Tables 4 to 11, inclusive. However, there are many considerations of topography, soil, climate, economic and other conditions, which influence these deductions. These considerations are here summarized for each section.

[1] "Use of Water as Measured on Various Systems."
[2] "Use of Water as Proposed for Various Localities."

TABLE 2. DESIRABLE MONTHLY DISTRIBUTION OF ANNUAL SUPPLY ACCORDING TO DUTY OF WATER

in sixteen sections of California, shown on Plate V.

Section.	Description of section.	Net duty of water.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No.		Feet depth on land.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
1	Los Angeles area, Ventura to Redlands	1 75	3	3	3	7	12	14	15	14	12	9	5	3
2	San Diego area, Mexican boundary to San Jacinto and Yucaipa	1 25	2	2	3	7	13	14	15	14	13	10	5	2
3	Imperial, Coachella and Palo Verde valleys	3 00	3	5	7	8	10	12	13	13	12	9	5	3
4	Antelope Valley and Mojave River areas	2 00	....	....	3	10	16	18	20	18	10	5	....	
5	Inyo-Kern, Owens and Mono valleys	2 50	....	..	2	10	16	20	20	18	10	4	....	.
6	Sierra foothills and rolling plains east and south of San Joaquin Valley floor	1 75	....	1	3	10	16	18	18	16	11	6	1	
7	San Joaquin Valley floor	2 00	....	2	5	11	17	18	18	15	10	4	..	
8	Western slope of southern San Joaquin Valley	1 75	.....	2	5	11	17	18	18	15	10	4	...	.
9	Santa Barbara, Santa Maria and San Luis Obispo areas	1 50	2	2	2	5	12	16	20	16	13	8	2	2
10	Salinas and contiguous valleys	1 75	....	.....	2	12	18	20	20	16	10	2	...	
11	Santa Clara and adjacent valley areas	1 50	...	...	4	6	15	20	15	15	14	9	2	
12	Delta lands of San Joaquin and Sacramento valleys	1 50	...	....	....	.....	8	22	30	25	15	.....	...	.
13	Sacramento Valley floor	2 25	....	.....	1	5	16	20	22	20	12	4	..	
14	Sierra foothills, and rolling plains east and west of Sacramento Valley floor	1.50	...	.....	2	2	15	20	22	20	13	5	1	..
15	North coast area	1 25	.	.....	.....	10	20	20	20	17	11	2	...	
16	Northeastern mountain-valley and plateau areas	1 75	....	.....	.....	3	14	24	26	21	12	.....	.....	

SECTION 1.

LOS ANGELES AREA, VENTURA TO REDLANDS.

Total agricultural area ---------1,310,000 acres
Area under irrigation in 1920-- 669,000 acres

Section 1 lies south of Tehachapi Pass and is disposed about the city of Los Angeles, the metropolis of southern California. It is bounded on the west and south by the ocean, and it extends from the Pacific littoral to include agricultural valleys that are situated on the western slope of San Bernardino Range. Almost all of Orange and one-half of Ventura and Los Angeles counties, together with portions of Riverside and San Bernardino counties, are in this section. It comprises the drainage basin of the lower half of the Santa Clara River and most of the area drained by the Ventura, Los Angeles, San Gabriel, and Santa Ana rivers.

This section includes the coastal plains of Ventura, Los Angeles and Orange counties, and the interior valleys of San Fernando, San Gabriel, Pomona, Cucamonga and San Bernardino. The upper margins of these valleys are between elevations of from 1000 to 1500 feet, and this, with the relatively short distance required to arrive at this altitude, gives rise to steep slopes, with the result that the larger portion of the irrigated lands of this section have favorable drainage.

The mountains of the section are of a granitic formation. The subsidiary hills, more dispersed and less elevated, are sedimentary, consisting mainly of shales and conglomerates. The predominant soils, derived from the weathering, attrition, conveyance and deposition of the rock composing these mountains, are, therefore, of granitic origin and may vary from a disintegrated granite near the hills to a sandy loam in the vicinity of the estuaries, while the soils which originate in the shale formations, show a finer texture in which clay and adobe are prominent.

The climate prevailing over the agricultural lands comprised in this section is tempered by the proximity of the Pacific Ocean. Seasonal fluctuations of temperatures are moderate, winter temperatures below freezing are infrequent and of short duration, and on the table lands bordering the coast, frosts are very exceptional. The coastal plains and plateaus are subject to frequent fogs and heavy dew, even during the dry season; the bottom lands of the interior valleys are subject to occasional frosts, but the thermal belt on the foothill lands is practically frost-free. The summer temperatures are highest in August, during which the mean monthly average is 73 degrees for this section, while the lowest temperatures occur in January, for which the mean monthly temperature is 52 degrees. The average seasonal rainfall of the plains and valleys is about fifteen inches, with a minimum of about nine inches and a maximum of over thirty inches.

The active growing season is comprised within the period of March to October; however, on the thermal belt of the foothills, citrus trees have a perennial seasonal growth, and on the plateau lands along the coast, vegetables are raised throughout the year. The culture of citrus trees, deciduous fruits, alfalfa, together with garden produce, are the

principal agricultural enterprises. Market facilities are exceptionally good, the country being interspersed with cities and population centers. Cooperative marketing has also been developed to an effective degree.

The electric lines that are spread throughout this section, together with the branch and feeder lines of two transcontinental railway systems that traverse it, their many stations and sidings, give exceptional opportunity for the transporting of freight shipments. The section is crossed and recrossed by hard surfaced highways, which gives facility for conveyance by motor; and through its ocean harbor, and its docks and wharves with their loading equipment, it has direct access to ocean transport.

The water supplies that have been developed, have not been sufficient to meet the demands of the entire irrigable area. There are, however, large volumes of flood water not yet utilized. In former years the main water supply was derived from the surface streams. These surface waters are not only limited in volume, but also extremely erratic in flow, depending upon seasonal rainfall. The result is a stream flow which rapidly decreases during the summer months. The absence of adequate reservoir sites in both the San Gabriel and San Bernardino ranges, and the existence of ground water basins of large capacity, which are well adapted for water storage, have developed in this region the practice of spreading flood waters over the gravel beds at and below the mouths of the canyons. The spread waters, after penetrating the surface soil, percolate to greater depths and become available for use through pumping from wells. This method of replenishment and retention of the underground storage for deferred use, is finding a more and more extensive application.

All of the main valleys and the entire coastal plain consist of alluvial deposits of great depth, which are suitable for the absorption of flood and rain waters. The past twenty years have seen the development of these ground water sources on an unprecedented scale through the sinking of thousands of wells, some of them to nearly two thousand feet in depth, and the installation of modern pumping equipment, so that today over sixty per cent of the irrigation and domestic supply is derived from subterranean sources. The relatively small cost of the development of individual ground water supplies, has made feasible this type of irrigation supply for small ranches.

Irrigation is necessary throughout this section to secure a crop yield commensurate in value with the price of the land. The amount of irrigation water actually applied to the land varies from six to twelve inches for bean crops and deciduous fruits, to as much as eighteen inches for citrus fruits and thirty inches for alfalfa. The available water has been rather effectively used, and, due to the surface slopes and the soil's texture that gives the favorable drainage prevailing in this section, it has been possible to collect and re-use some waters after their initial application. In localities adjacent to the coast the stored soil-moisture is conserved by the high humidity, and the fogs and mists that occur at certain intervals. Scarcity of water has required the effectual use made of it in this section; a large portion of the acreage brings crops to maturity with a water use of one foot or less.

The mean of the measured net annual use for the entire section is 1.62 feet in depth. This quantity is slightly less than that required

to obtain full crop production. This lesser use of water results, in part, from the smaller demand made by acreages planted to young orchards and by groves which have not reached mature growth. The net duty for this section is therefore 1.75 feet.

The monthly distribution of the accessory water supplies, in per cent of the entire seasonal use, is well indicated by the present and past use on existing irrigation systems. On some of these systems the natural stream flow has been supplemented by storage, and on many projects the available surface waters have been greatly enhanced by the development of underground waters. This regulation and augmentation has resulted in a fairly adequate water supply throughout the irrigation season.

The desirable monthly use in per cent of total seasonal supply, is, therefore:

January	3 per cent
February	3 per cent
March	3 per cent
April	7 per cent
May	12 per cent
June	14 per cent
July	15 per cent
August	14 per cent
September	12 per cent
October	9 per cent
November	5 per cent
December	3 per cent

SECTION 2.

SAN DIEGO AREA, MEXICAN BOUNDARY TO SAN JACINTO AND YUCAIPA.

Total agricultural area ----------984,000 acres
Area under irrigation in 1920---- 96,000 acres

This section contains almost all of San Diego County, portions of Riverside, Orange and San Bernardino counties, and comprises within its boundaries, the drainage basins of Sweetwater, San Diego, San Dieguito, San Luis Rey, Santa Margarita and San Jacinto rivers, all of which flow into the Pacific Ocean. It is bounded on the south by Mexico, on the east by the San Jacinto and San Diego mountain ranges, on the northeast by San Bernardino Mountains, and on the west by the Pacific Ocean.

The agricultural lands of this section lie on the coastal plains, on the foothill slopes rising from these plains, and in the foothills and mountain valleys of the San Bernardinos. The parcels of farming land adjacent to the coast cover a strip some seventy miles in length, and from twenty to thirty miles wide. The agricultural areas of valley land are located inland a distance of approximately thirty-five miles from the ocean and include the interior valley of the San Jacinto river and the Hemet, Lakeview, Perris, Elsinore and Temecula valleys. The table lands along the coast have a compact, impervious subsoil; the lands of both the coast and interior valleys in many instances have subsoils of dense texture.

The mean annual rainfall ranges from about ten inches for the coastal lands to a maximum of about forty inches in the higher moun-

tain areas. Most of the agricultural lands on which irrigation is now practiced have a mean annual precipitation of less than eighteen inches. The proximity of the ocean has its influence in suppressing the extremes of summer and winter temperature. The seasonal variation of temperature in departing so slightly from the mean, is conducive of long growing season which permits double cropping. The culture of vegetables during the winter months is being more widely practiced. Portions of the coastal area and lower interior valleys are well adapted to citrus culture. The more remote interior valleys have occasional frosts and for this reason are more suitable to the raising of alfalfa and deciduous fruits.

The transportation facilities are the main and branch lines of two transcontinental railroads. Marketing facilities are good along the coast. The principal city, San Diego, situated on a salt water bay, has docks, wharves and freight-transfer equipment and an extensive ocean commerce.

There are no appreciable areas of water-logged lands in this section. The available water supply along the coast is limited. In the coastal valley, surface storage of flood waters is practiced while underground storage is limited by the shallow depth of the alluvial fill. In the interior valleys both surface and ground water storage is utilized. The scarceness of the supply has developed a high standard of irrigation practice and intensive cultivation of the soil. The trend of development is toward small farms of ten to forty acres, although there are still a number of large grants which have not been subdivided.

The use of water is from six inches to two feet. The average measured net annual use is 1.26 feet in depth; it represents past practice and is the mean of sixty-three records for an aggregate area of 321,700 acres. The use has been to some extent limited by the scarcity and high cost of water. These conditions will continue to exist, for the available water supply is small as compared to the total area of agricultural lands. This favors future development taking place along the Pacific coastal plains where the climatic conditions and the adaptable crops favor a small water requirement. As the country becomes more intensively developed, it is probable that the culture of alfalfa will give way to orchards, vegetables and grapes, which require less irrigation water. These considerations disclose that the average net duty for this section is 1.25 feet in depth.

The monthly use of irrigation water in per cent of the total seasonal use, is well indicated by the past use on lands which have been served with a controlled water supply, and is:

January	2 per cent
February	2 per cent
March	3 per cent
April	7 per cent
May	13 per cent
June	14 per cent
July	15 per cent
August	14 per cent
September	13 per cent
October	10 per cent
November	5 per cent
December	2 per cent

SECTION 3.

IMPERIAL, COACHELLA AND PALO VERDE VALLEYS.

Total agricultural area ---------1,299,000 acres
Area under irrigation in 1920---- 524,000 acres

This section is located in the southeastern corner of California. It lies east of the San Bernardino Range, is bounded on the south by Mexico, on the east by Arizona, and includes the agricultural lands reclaimed from the Salton Sink, and a strip of bottom and plateau lands that border the Colorado River. It comprises over one-half of Imperial County, and portions of San Bernardino, San Diego and Riverside counties. The principal agricultural areas lie in Imperial, Palo Verde and Coachella valleys.

Imperial Valley, the most extensive body of agricultural land in this section, is in Imperial County between the Salton Sea and the Mexican boundary. This valley is at or below sea level and comprises part of the delta of the Colorado River. The soil varies from a very fine, sandy loam to a hard clay. The region has practically no rainfall and is entirely without local water supply.

Palo Verde Valley is located along the western bank of the Colorado River and is the most easterly of the three principal agricultural valleys in Section 3. This valley lies partly in Riverside and partly in Imperial County. The soils of the bottom lands which are contiguous to the Colorado River, are exclusively the deposit of this river and are lighter and more easily tilled than some of the Imperial Valley soils. The Palo Verde table lands, which are located in the western portion of the valley away from the river and above the bottom lands, are of a different formation, and have their origin in the Chuckawalla Ranges.

Coachella Valley, in Riverside County, is located northwest from Imperial Valley and west of the Palo Verde Valley and extends from the vicinity of Palm Springs east of San Gorgonio Pass, at an elevation of about 1200 feet, to the Salton Sea on the south, which is 250 feet below sea level. This valley has been built up by the deposits of the Whitewater River and its tributaries, which originate in the granitic formations of the San Jacinto Mountains to the northwest and San Bernardino Mountains to the north, although some of the minor tributaries find their origin in the clay hills which border the valley along the northeast boundary.

Because of the low elevation of the farming lands of both the Imperial Valley and Palo Verde Valley relative to the Colorado River, which forms the only possible water exit for these areas, the natural drainage is defective. Much water-logging of agricultural land has already taken place. Extensive drainage works are under construction that these conditions may be remedied. Coachella Valley, with its sandy soil and subsoil, has very favorable drainage conditions. The great depth to ground water in this valley is, in part, the result of withdrawal of ground waters through pumping. There are, however, bottom lands in the Coachella Valley, near the Salton Sea, where the drainage is not so satisfactory, and the ground waters are close to the surface of the soil.

The winters in these valleys are mild throughout the day, but night temperatures are low and frosts occur occasionally during the months of December, January and part of February. There is, however, a markedly higher prevailing winter temperature over the high table lands which girdle the valleys of the Imperial and Palo Verde. This higher temperature is found also in the sandhill regions and the foothills of the Coachella Valley. The summers are long and hot. The humidity is very low, especially during the summer months. The main agricultural areas of this section have a negligible rainfall, the mean precipitation being less than four inches; however, the snowcapped mountains of the San Jacinto and San Bernardino on the north and northwest, receive a seasonal, though irregular precipitation on their desert slopes. These rainfalls are of high intensity, but of short duration, and are of a type that produces an extremely erratic run-off.

The growing season extends practically throughout the year, though some agricultural plants are more or less dormant during the months of December and January. The standard crops are alfalfa, corn, grain, cotton, melons, vegetables and grapes, with some citrus and deciduous fruits. The date industry has become prominent in Coachella Valley and in the northern part of the Imperial Valley. Coachella Valley and Palo Verde Valley are each served by one transcontinental railroad. Imperial Valley has one transcontinental line, besides several branch and feeder lines, and all three districts are well situated as to marketing centers and freight shipping points. There are numerous precooling plants and vegetable and fruit storage plants which are adequately equipped for the icing of transcontinental refrigerator trains that take on their loads of agricultural products in this district.

In Imperial and Palo Verde valleys, farming is at present conducted on comparatively large units of land, that is, 160 to 320 acres and more in extent. The subdividing of these large units into smaller tracts has been in progress as crops, other than alfalfa, grain or cotton, are raised.

In the Coachella Valley small ranches and intensive cultivation are the rule. The available water supply is pumped from wells or is derived from artesian flow, and is limited. It is, however, feasible to supply the Coachella Valley from the Colorado River, and this source of water supply is under investigation by the United States Reclamation Service. Both Palo Verde and Imperial Valley receive their water supply from the Colorado River, although this sometimes drops below the flow required to satisfy the demand during the month of September.

Water is being less wastefully used as farming methods improve, particularly in Imperial Valley and Palo Verde Valley, while in Coachella Valley the scant supply tends toward an economical use of water. The soil of the Coachella Valley is unusually porous and has free underground drainage, so that the quantities used are greater than in the other valleys. The average use of water on the land in Imperial Valley and Palo Verde Valley, is in the neighborhood of 2.5 to 3 feet in depth, while in Coachella Valley the average use, on small areas of sandy soils with free underground drainage, has been nearly five feet in depth. The average net annual use which represents past practice is 2.91 feet. This is the mean of 51 records, equivalent to one year's measurements on 2,588,000 acres.

Because of the deficiency in the water supply during the late summer and early fall months of some years, the use has been less than that which would obtain with an ample supply for the entire season; on the other hand with abundant water in the early summer months, greater amounts have been used than were needed. The average net duty for this section is, therefore, 3.0 feet in depth.

Modified to improve the late summer deficiency, the past use in Imperial Valley and the use obtaining close at hand on the Salt River and Yuma projects in Arizona, disclose that the desirable average monthly use in per cent of the total seasonal supply is:

January	3 per cent
February	5 per cent
March	7 per cent
April	8 per cent
May	10 per cent
June	12 per cent
July	13 per cent
August	13 per cent
September	12 per cent
October	9 per cent
November	5 per cent
December	3 per cent

SECTION 4.

ANTELOPE VALLEY AND MOJAVE RIVER AREA.

Total agricultural area.....1,107,000 acres
Area under irrigation in 1920.... 22,000 acres

This section is south of the Sierra Nevadas, east of the Tehachapi Pass and north of the San Bernardino Mountains, and comprises portions of Kern, San Bernardino and Los Angeles counties. The irrigable agricultural lands lie in Antelope and Victor valleys in the western portion of the Mojave Desert. These lands are located at the general altitude of 3000 feet. The most fertile sections are the northern slopes of the mountains which have a soil of disintegrated granite, while the bottom lands show heavier soils sometimes impregnated with alkali.

The climatic characteristics are high temperatures throughout a large part of the year, a long hot summer, winters with occasional frosts and severe wind storms, a low humidity, and a very meager rainfall. The northern slopes of the San Bernardino and San Gabriel mountains receive seasonal rains. The daily range of temperature is very great.

Agriculture is impossible without irrigation. There are but few continuously flowing streams in or near the agricultural areas, but subterranean waters are procurable from wells, in limited quantities. Only about two per cent of the agricultural area is irrigated. Of this, less than one-third is supplied by gravity water, the remainder receiving its accessory supply through draft on the ground waters underlying the agricultural lands.

Antelope Valley in the western portion and Victor Valley in the southern portion of this section, produce alfalfa and deciduous fruits

such as pears, apricots, almonds and apples. The marketing facilities are adequate, the district being traversed by the main line of a railroad.

The severity of the desert climate and the deficient water supply have put natural limitations on the development of this section, and large areas will undoubtedly remain uncultivated for the want of irrigation water. The measured average net annual use is 1.39 feet. This is the mean of records for the equivalent of one season's measurements on an area of 6,500 acres. A considerably larger quantity of water is required for full production of general crops, but the available water supply is very limited so that undoubtedly, crops requiring the least irrigation water will be grown. From these considerations the average net duty is disclosed as 2.0 feet in depth.

The average monthly use in per cent of the total seasonal supply is revealed from the consideration of the growing period, monthly temperatures, precipitation, probable crops to be grown and a comparison with the use in other localities, and is:

January	0 per cent
February	0 per cent
March	3 per cent
April	10 per cent
May	16 per cent
June	18 per cent
July	20 per cent
August	18 per cent
September	10 per cent
October	5 per cent
November	0 per cent
December	0 per cent

SECTION 5.

INYO-KERN, OWENS AND MONO VALLEYS.

Total agricultural area	657,000 acres
Area under irrigation in 1920	136,000 acres

This section lies east of the crest of the Sierra Nevada Mountains, south of Lake Tahoe, and comprises all of Alpine and Mono counties and portions of Inyo County. The section extends from the north end of Alpine County to the southern boundary of Inyo-Kern Valley in Kern County, an approximate distance of 225 miles. The principal agricultural areas are located in the valleys of Walker River and Mono Lake, in Mono County, in the various subdivisions of Owens Valley, and in Inyo-Kern Valley. The altitude varies from about 2500 feet in Inyo-Kern Valley to 6500 feet in the East Walker area. The average annual precipitation is less than seven inches. There is in the higher valleys a well-defined winter season. Stock raising and the growing of stock feed to supplement the native grass on the range, constitute the chief agricultural pursuit. The irrigable areas in the northern part of this long narrow section are to be found on the tributaries of streams flowing into Nevada, thus, in Alpine County, several thousand acres are irrigated from the west and east forks of Carson River, and in the Antelope and Bridgeport regions, a much larger area is watered by the tributaries of Walker River. Mono Lake, at an elevation of 6400 feet

and having an area of 54,000 acres, is fed chiefly by streams flowing from the eastern slope of the Sierra Nevadas. The lake has no outlet, but loses its water by evaporation.

Owens Valley is located in Inyo and Mono counties and embraces a strip of agricultural land of from two to six miles in width and 120 miles in length. The average elevation is 4000 feet. The mean monthly winter temperature drops as low as 35 degrees during the months of November to March, and frosts are frequent. The summers are hot and dry and the growing season extends from April to October, during which irrigation is practiced. Owens Valley receives an average seasonal precipitation of less than six inches, while a fairly abundant rain and snowfall occurs on the eastern slope of the Sierras and furnishes a water supply for both Mono and Owens valleys which is in excess of their needs. The mountain ranges to the east of Owens Valley receive but scant seasonal rainfall, and this does not contribute materially to the water supply of the valley. The side slopes of the valley are steep and the soil, which is a distintegrated granite with extensive lava beds, is generally porous and conducive to large seepage losses. The bottom lands of Owens Valley are deficient in drainage. Here are large grass areas and alkali flats that are not irrigated. These are recipient of much of the drainage water coming from irrigation on the more elevated land. These flats evaporate considerable amounts of water, so that under present conditions only a part of the drainage waters are available for re-use.

Inyo-Kern Valley occupies the southern part of this section and has an average elevation of 2500 feet. The climate has all the characteristics of the desert, with a hot and dry summer and occasional frosts in winter, but the elevation of the valley accentuates the cold of the winter nights so that the growing season is not perennial. The tributary drainage area is deficient in water production, so that large portions of this valley have no irrigation possibilities, unless it be by importation of a supply from other districts. A small amount of ground water is being developed from wells at the present time.

The slopes rising from the floors of these valleys, which are well drained and have a sandy soil, offer the best farming possibilities. Alfalfa and deciduous fruits are raised, the latter being probably the more dominant crop on account of the lack of an adequate water supply.

Mono Valley is without railroad transportation, it maintaining communication through highways alone. The Owens and Inyo-Kern valleys are served by a branch line of one of the transcontinental railroads.

The average measured net annual use of irrigation water in this section is 3.31 feet. Wherever water is readily obtainable, a liberal use has been the prevailing practice. This excessive use of water, resulting from the crude and wasteful methods of irrigation, has resulted in much water-logging of agricultural lands and the accumulation of alkali salts to a damaging extent, over large areas. The subdivision of the larger holdings, the growing of more diversified crops, the improvement of canal systems and the more skillful application of water, should bring about, in time, a more careful use of water as it has in

other sections of the state and, in anticipation of modifications to the present practices similar to those which have elsewhere occurred, the data discloses the annual net duty to be 2.5 feet in depth.

As a rule, little water is used for irrigation before the first of April, or after the last of September. The desirable monthly distribution of the annual supply during the irrigation period, expressed in per cent of the total seasonal use, has been derived from the records of past use, modified slightly to conform with conditions were there a fully regulated water supply, instead of the natural stream flow, which is low during the late summer months. It is as follows:

January	0 per cent
February	0 per cent
March	2 per cent
April	10 per cent
May	16 per cent
June	20 per cent
July	20 per cent
August	18 per cent
September	10 per cent
October	4 per cent
November	0 per cent
December	0 per cent

SECTION 6.

SIERRA FOOTHILLS AND ROLLING PLAINS EAST AND SOUTH OF SAN JOAQUIN VALLEY FLOOR.

Total agricultural area	1,800,000 acres
Area under irrigation in 1920	77,200 acres

This section extends from the Mokelumne River to the Tehachapi Pass, thence around the south end of the San Joaquin Valley to a line opposite Buena Vista Lake and includes portions of the San Joaquin, Calaveras, Stanislaus, Tuolumne, Merced, Mariposa, Madera, Fresno, Tulare and Kern counties. It includes all the agricultural lands above the floor of the San Joaquin Valley on the western slope of the Sierra Nevada Mountains and on the northern slope of the Tehachapi. The agricultural lands of the section are situated in the small valleys on these slopes and on the foothills and rolling plains, and areas between the flat floor of the valley and the mountains proper.

The surface conformation of the agricultural area in this section, ranges from the gentle slopes along the foothills, which merge into the valley floor, to the steeper slopes and irregularly broken and scattered parcels at the higher elevations. The land rises rapidly and with increasingly steep gradients, as it recedes from the floor of the valley, and some of the agricultural land attains a maximum elevation of from 2500 to 3000 feet.

The soils along the foothill slopes are generally loams and gravelly loams underlaid at varying depths with compact subsoils or hardpan, and heavier soils. The soils of the higher lands have been mainly formed from the weathering of granitic rocks. They are micaceous, usually friable, and commonly underlaid with more compact and less permeable

subsoils. At widely varying depths, but usually less than six feet, the subsoil passes into partially disintegrated granite which frequently continues for several feet before reaching the unaltered rock. The surface drainage is good and the lands of this section are free from alkali.

While the winters are cold and the precipitation relatively large over the higher mountain areas, the climatic conditions on the lower part of the area are similar to those of the valley floor. The summer temperatures decrease slightly as the higher elevations are reached, but in general the irrigation season has its beginning later in the spring months. The present irrigated area in this section is only a small part of the total area of agricultural lands. The irrigated crops are principally deciduous and citrus fruits, vines, and alfalfa. The thermal belt, extending along the foothills and below an elevation of 1200 feet, gives a large area that is adapted to the raising of citrus fruits. Alfalfa is mostly limited to the lower plains and to some of the flatter lands located in the smaller valleys in the hills.

Good railroad transportation facilities are afforded the regions along the lower edge of this section by two transcontinental lines. Branches of these lines, and electric railroads extend into the more developed hill area of this section, however, much of the higher lands of Section 6 require a long haul to reach shipping points on the railroads.

Of the lands bordering the valley, the favorable gradients of the surface slope, and their elevation above the floor of the valley and above the bottom of the stream beds that traverse this area, give it a good drainage.

The water supply is dependent principally on streams and rivers that have their origin in the high Sierras, and which flow through this area to the San Joaquin Valley floor below. As much of the normal flow, and practically all of the late summer and autumn flow, is already utilized, the development of irrigation water for the rest of this section is dependent on the storage of flood waters and on a limited amount of ground water. For this reason, as well as the irregular surface contour, the cost of irrigation development will necessarily be high for most of the area.

The agricultural growth of this section indicates that the future development will be principally in the intensive farming of the higher priced irrigated crops. The large area included in the thermal belt will make citrus fruits an important crop, also. It is anticipated that deciduous orchards and vineyards, with some alfalfa and miscellaneous crops, will comprise the remainder of the products grown on the irrigated area.

The net use of water for citrus land ranges from 1.5 to 2 feet; the average net annual use obtained on the Lindsay-Strathmore and Terra Bella irrigation districts, where citrus crops predominate, is about 1.5 feet in depth, although the use on these districts has been limited by the scarcity of water. The use for the other crops will be somewhat less than on the floor of the valley, because alfalfa will naturally be a minor crop and conditions will demand a careful use of water. These considerations reveal that the average annual net duty for this section is 1.75 feet in depth.

The monthly use of water in the past on the Lindsay and Terra Bella districts, is of value in determining the ultimate monthly use for lands devoted principally to citrus fruits. For other crops the monthly use determined for the San Joaquin Valley floor, is more representative. The desirable monthly distribution, in per cent of the total seasonal use for this section, determined from these data is:

January	0 per cent
February	1 per cent
March	3 per cent
April	10 per cent
May	16 per cent
June	18 per cent
July	18 per cent
August	16 per cent
September	11 per cent
October	6 per cent
November	1 per cent
December	0 per cent

SECTION 7.

SAN JOAQUIN VALLEY FLOOR.

Total agricultural area.....5,468,000 acres
Area under irrigation in 1920...2,712,000 acres

Section 7 comprises about two-thirds of the total agricultural area of the great central valley, and consequently 25 per cent of the total agricultural lands of California. It contains the largest irrigated district of the state. Broadly speaking, it includes that portion of the great valley that lies between the Sierra Nevada and Coast Range mountains, from the Tehachapi Pass on the south to Cosumnes River and the lower delta lands of Suisun Bay on the north. The alluvial fan of Kings River forms a low ridge which separates the Tulare Basin, or the southerly portion, from the remainder of the valley. Portions of Contra Costa, San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern counties are included in this section.

Kings River, during flood stage, flows in part through Fresno Slough into San Joaquin River, and in part into Tulare Basin. The other main streams entering the Tulare Basin are the Kern, Tule and Kaweah rivers. The drainage basins of these streams extend into the high Sierras and, during years of more than normal flow, their flood waters reach Tulare Lake. Through evaporation and non-replenishment from flood waters in all seasons, a large part of the bed of Tulare Lake periodically becomes dry, and is put under cultivation. Levees have been built to restrict the flooded area of this lake bed. With the extension of irrigation and the development of storage of flood waters, the frequency and extent of overflow will be reduced. Kern River discharges into Buena Vista Lake, which has been converted into a storage reservoir by the construction of earth embankments, and now, only during exceptional flood years, do surplus flood waters reach Tulare Lake from this river.

Upper San Joaquin River is the first important stream north of the Kings River ridge. The San Joaquin rises in the high Sierras and flows

down the westerly slope of this range in a southwesterly direction until it reaches the trough of the valley, where it turns and flows along the trough in a northwesterly direction to Suisun Bay. The main tributaries of the San Joaquin River in order from south to north, are: Merced, Tuolumne, Stanislaus, Calaveras and Mokelumne rivers. All their drainage areas, except the Calaveras, extend into the high Sierras. The maximum flood flows occur during the mid-winter months and result from excessive rainfall, but are of short duration. The more continuous flood flows are produced by melting snows, and these occur during the months of May and June. The stream flow then diminishes rapidly and is small during the late summer and autumn months.

The smaller streams draining into the San Joaquin Valley, whose drainage basins do not reach into the high mountains, are fed largely by rain water; they are intermittent and more torrential in character. The streams that have their watersheds on the east slope of the Coast Range, are of less importance, since the precipitation on this slope is small, and the run-off is subject to wide fluctuations with little or no dependable flow during dry years.

A strip of low lands along the trough of the San Joaquin Valley and extending from the mouth of Upper San Joaquin River near Kings River ridge, to about the mouth of the Stanislaus, being in width from about one to twelve miles, is below the high water level reached during the maximum floods. These lands are, in part, reclaimed and protected from overflow by levees. Below the mouth of the Stanislaus, is the San Joaquin delta proper which merges with the delta of the Sacramento and Mokelumne rivers.

The lands in this section range from 450 feet above sea level at the southerly end, to slightly above sea level for the lands adjacent to the delta region in the north. The average longitudinal slope of the floor of the valley, from the Kings River ridge on the south, to the mouth of the Stanislaus on the north, is about two feet to the mile. The transverse slope towards the trough of the valley, increases from less than five feet to a mile for some of the flattened or basin-like surfaces in the lower parts of the valley adjacent to the trough, to from five to ten feet per mile for the main body of the land on either side of the valley, and from ten to forty feet per mile for the lands near the foothills. In general, the slopes on the eastern side of the valley are somewhat flatter than those on the western side. The favorable slope and smoothness of the surface make the cost of construction of distribution ditches and the preparation of lands for irrigation, relatively low; on the other hand, this advantage is offset on flat slopes toward and along the trough of the valley, coincident with the low elevation and the decreasing depth of the river and creek channels as they reach the trough, by poor drainage conditions and limit the amount of surplus irrigation water which can enter the soil and be carried away through natural underground drainage and require the construction of drainage canals.

The valley floor is the result of the filling from unknown depths, of material washed down from the enclosing mountains and distributed across land surfaces as alluvial fan material. There is considerable variation in the texture and other properties of the soil and subsoil, not

only in areas far apart, but also in adjacent small areas. In general, the soils of the land on the east side of the valley and north of Kings River, vary from coarse, sandy loams to clay loams with medium sandy loams predominating. The soils are generally underlaid with compact subsoils and in some cases with more or less continuously indurated or hardpan layers. The hardpan varies from a few inches to one or more feet in thickness and is found at depths that range from near the surface to six feet or more. This presence of compact subsoil or hardpan under most of the coarse, sandy soil, permits the irrigation of these soils without an excessive use of water. The soils on the east side of the valley, south of the Kings River, are generally sandy loams, loams and clay loams, but not underlaid by hardpan; they are retentive of moisture and are productive under sparing applications of water.

The soils on the entire western side of the San Joaquin Valley, are generally more compact in texture and retentive of moisture than the soils on the east side, and consist principally of loams and clay loams.

Alkali lands occur in scattered spots or streaks of a few acres in extent, to bodies of land that include several thousand acres or more. North of the Kings River ridge, alkali areas are confined largely to the flatter slopes and the basins lying adjacent to and along the trough of the valley. South of the Kings River ridge and in the Tulare Basin, there is a belt of alkali-free land averaging several miles in width and extending along the lowest part of the valley from Tulare Lake on the south, to the ridge on the north. This strip is bordered on the west by a continuous body of alkali soils varying in width from less than one mile to six or seven miles. This one continuous body of alkali soil comprises practically all of the alkali lands on the west side. On the east side of the Tulare Basin, excepting for this belt, the alkali soils are largely confined to the flatter slopes and to scattered bodies of land where high water table conditions exist. The steeper slopes near the foothills are usually free from alkali. While some of the alkali lands were formed by the accumulation of alkali salts through natural processes and prior to the initiation of irrigation, the area of alkali lands has been increased in extent through the rise of the groundwater level and resulting concentration of alkali salts near the surface of the soil. This has come about through the application of irrigation waters to adjacent lands and inadequate drainage for the removal of the deeper percolating water from these applications.

The main characteristics of the climate of the San Joaquin Valley are warm, dry summers and moderate winters. The temperatures increase and the rainfall decreases from north to south. There is a long, dry season almost without rain, extending from May to September. During the period from June to September, inclusive, there is a mean rainfall of less than one-half inch. The mean annual rainfall ranges from about five inches in the south to about fifteen inches in the north.

The mean annual temperature ranges from 60 degrees to 65 degrees, with the mean monthly temperature having a variation between 46 degrees in January, and about 81 degrees in July. Minimum temperatures of 20 degrees and maximums of 115 degrees are occasionally attained. The sun during the summer months, shines about 95 per cent of the hours between sunrise and sunset. The growing season is long;

the average frost-free period extends from about March 1st to the middle of November, though killing frosts have occurred as late as the middle of April and as early as the first week in November. The prevailing winds are from the northwest; they attain their highest average velocity in May and June, being reported at Fresno as 10.0 and 9.3 miles per hour for these months, respectively.

Transportation facilities are good throughout the valley, there being over 1400 miles of railroad tracks, not including sidings and spurs. Two transcontinental lines which traverse the entire length of the valley, with their branches, serve a large portion of this area.

The production of dry-farm grain, which has been an extensive pursuit in the valley, has become of less importance through the extension of irrigation. Grain is now grown with irrigation where the rainfall is deficient and not dependable, to rotate with crops, or in double cropping when it is followed by a second crop of corn or beans. Alfalfa is an important irrigated crop, especially during the early years of development of an irrigation project. In the Modesto District, the area in alfalfa reached a maximum of 87 per cent of the total area in crops for the year 1911, but decreased to 40 per cent of the total for the year 1921. In the Turlock District, the percentage decreased from a maximum of 73 per cent in 1914, to 31 per cent in 1921. Alfalfa is an important crop on the west side of the San Joaquin Valley and on lands that are irrigated with the waters of Kern River. On the other hand, it is a less important crop on lands supplied with waters from Kings River. The available data indicate that with an ample supply throughout the season, the area in alfalfa pastures on different projects would range from 20 to 50 per cent of the cropped area and will average about 35 per cent for the entire valley.

The vineyards and deciduous orchards are of growing importance, and are gradually being planted on areas that have been previously devoted to alfalfa and general field crops. In the Fresno Irrigation District, the area in grapes and deciduous orchards is 55 per cent of the gross area planted to crops, but on later projects, such as the Modesto District, the percentage is 20, while on the Turlock District, it is 12 per cent. The available data indicate, that with an adequate irrigation supply, the area in orchard or vines on different projects will range from 10 to 60 per cent and will average 30 per cent for the entire San Joaquin Valley. Sorghum, corn, sugar-beets, melons, beans and other minor crops are successfully grown in the San Joaquin Valley, and will make up the remainder, or 35 per cent of the irrigated crop-area.

The water supply for irrigation use in the San Joaquin Valley has been in the past, largely a diversion of the direct stream flow, unregulated by storage and receiving but small increments of water from underground sources. The marked features of the stream flow are large flood flows during the months of May and June, with a rapidly decreasing flow during July, and with very small flows for the remainder of the irrigation season. This results in an abundant supply during the early months of the irrigation season, which may extend into July during wet years, but a deficient supply in the later

summer months. Because of the uncertainty of the duration of the water supply, and the resulting attempt to store water in the soil for use later in the season, excessive amounts of irrigation water have been applied to the land during the early months of the irrigation period. With an ample supply throughout the season, a better distribution and less wasteful use of water will result.

The underground water is an important source of irrigation supply. It occurs extensively and can be economically developed through pumping from wells. These underground waters have their source in the seepage from the rivers and irrigation canals, and from the surplus irrigation waters applied to the land, which pass down through the soil beyond the reach of the plant roots. Where the supply is unreplenished, as in those areas toward the foothills on the west side, the quantity of underground water is deficient in amount, or can not be economically lifted to the ground surface. The development of underground water as a source of irrigation supply, has been very rapid. In 1909, the area irrigated from underground water was 91,000 acres; it increased to 171,800 acres in 1912, and to over 400,000 acres in 1920. In some areas the annual withdrawal of water has approached, if not actually exceeded, the replenishment.

Prior to irrigation, the groundwater table under the lands not irrigated was at a considerable depth below the earth's surface. In some of the first wells near Fresno, the depth to the water surface was sixty-five feet. The depth to water in a number of wells in the Modesto Irrigation District for the year 1904, which was the first year of irrigation, ranged from 12 feet to 78 feet below the ground surface. During the early years of an irrigation project, before a large portion of the area is irrigated, because of the abundant supply, water is used rather promiscuously and quantities of water are applied to the land far greater than the soil can retain, or the plant growth utilize. On the Modesto District, the volume of water diverted from the Tuolumne River per season, during the first four years, averaged about 10 feet in depth over the land irrigated. Occurrences similar to this have been experienced on nearly all large irrigation projects. Surplus water applied to the land, together with the seepage losses from canals, moves downward through the earth until they reach and unite with the groundwater. When the increment added to the groundwater is greater than the quantities subtracted from it, the water table rises, and on occasions reaches so near the surface that large acreages suffer from an excessively high water table, with, in many cases, a gradual accumulation of alkali salts at the surface of the ground. With the added increments exceeding the subtractions, the water table continues its rise until the evaporation loss from the water-logged lands, together with the underground drainage, equals the surplus irrigation water applied and then a condition of equilibrium is reached.

On one large area of the San Joaquin Valley, 66 per cent of the territory had a water table within four feet of the surface for a period of one month. On another large tract elsewhere in the San Joaquin Valley, over 30 per cent of the area had a water table within four feet of the ground surface for a period of three months. On two irrigation

districts, the water table has been within six feet of the surface for a period of one month; more than 40 per cent of the area of one district and over 60 per cent of the area in the other district, was so affected. On many large bodies of land receiving gravity irrigation water, and where the groundwater table is within the zone of plant roots, the water table seasonal fluctuation is from three to five feet. It rises rapidly after the beginning of the irrigation season, attains its maximum in June and July, and then recedes. The result of this fluctuation is that the deeper root system is drowned out with their submergence by the rising water table and the occurrence as a whole is disastrous to plant growth.

The water-logging results from the surplus irrigation water being greater in amount than can be carried away by the underground drainage. To remedy or ameliorate the water-logged condition, the lining of canals to prevent seepage, and artificial drainage, have been resorted to on a number of projects. The lowering of the water table by pumping from the groundwater is now being successfully carried out in some parts of the valley. This practice not only drains the land, but also recovers water which is available for second use. This recovery of underground water by pumping from wells, the lining of those canals that suffer excessive losses, the more economical use of irrigation water will, to a large extent, prevent water-logging and will also permit the irrigated area to be extended.

The extensive development of irrigation in the San Joaquin Valley dates from about 1870. The first large system constructed was that of the San Joaquin and Kings River Canal and Irrigation Company, which first diverted water from San Joaquin River in 1872. This was followed by extensive canal construction about Fresno, and in Tulare and Kern counties. By 1880, the total area irrigated in the San Joaquin Valley had reached 188,000 acres. The greater part of this was planted to cereals, a considerable acreage in alfalfa, and the remainder in orchards and gardens. About 1880, the fruit industry began to assume importance, and from this time on, irrigated agriculture developed rapidly. To about 1887, all the development was made by private enterprise. In 1887, the state legislature passed the Wright Act which provided for the organization and bonding of districts for the construction of irrigation works by vote of residents within the district boundaries. In 1897, the Wright Act was amended and superseded by the Bridgeford Act. Since that date development through the organization of irrigation districts has been very rapid and nearly all of the increase in the area irrigated has been accomplished through district organization. There are now about 30 organized districts in the valley.

The total agricultural area on the valley floor is 5,468,000 acres, and the total irrigated area in 1920 was 2,712,000 acres. This irrigated area includes a small acreage of lands in the foothills.

The present area irrigated has been largely dependent for its water supply on the direct diversion of natural stream flow and on the utilization of ground waters pumped from wells. The crops grown have been selected because of their adaptability to the uncertain irrigation season. Some areas or districts depending on natural stream flow,

have enjoyed a good supply either on account of their prior rights, or because the area utilizes only a very small part of the total flow of the stream. On the other areas, attempts have been made to utilize a larger part of the natural stream flow by applying some of the flood waters to lands devoted to the growth of grain, alfalfa or pasture, in the anticipation that these crops might be grown with occasional irrigation and thus avoid, to some extent, the total waste of flood waters. However, intensive irrigated development has been limited to those areas which have a dependable supply of water each year and during at least part of the usual irrigation season. The variable character of the stream flow tributary to the San Joaquin Valley, and the low summer flow, are such that the demands for water of the present area irrigated, even in years of exceptionally heavy run-off, are greater than the low water summer-flow of the streams.

Further development is dependent upon the better and more complete utilization of the water supply. This involves the economic application of water to the land to prevent excessive waste, the avoidance of abnormal conveyance losses, the recovery of underground waters through pumping and the maintenance of an adequate drainage, and the regulation of stream flow through the storage of flood waters. Such improved utilization of water is proceeding advantageously in a number of districts and large storage reservoirs are being built, or are in contemplation; ditches are being lined with concrete; drainage problems are receiving more serious consideration, and these are resulting in a more intensive cropping of the higher priced farm products and enhanced yield from the plantings of standard crops.

The rate of use of irrigation water varies considerably, not alone in different localities of the valley, but also on individual farms. The variations of climatic conditions are not sufficiently marked to account for the difference in water requirements of the several localities, while the precipitation increases and the temperature decreases from south to north, the difference in rainfall does not represent an equal difference in water requirements. The capacity of the soils to hold moisture is limited, and the late spring rainfall is small, and the precipitation is practically nothing during the normal growing season.

The variations of soil in texture are considerable, but as the larger part of the more porous soils are underlaid with impervious materials, the water requirements for sandy soils are not very different from those of the more retentive soils. The use of water varies with the kind of crops grown, but the largest variation in use of water on lands which have essentially the same climatic conditions, the same soil, and growing the same crops, is generally due to the amount of available water and its cost. With a supply regulated to insure irrigation during the full active growing period, and having experienced the destructive and expensive effects of the rise in the groundwater table, from deep percolation of excess irrigation water, a more saving use is going to be the practice. Alfalfa, which is an important crop, will produce full yields with 2.0 to 3.5 feet of water applied on the land. The smaller quantity is sufficient for the retentive soils where natural underground drainage is limited, and the groundwater less than eight to ten feet

from the surface; the larger quantity of water is required for maximum yields on the more porous soils and where subsoils have good underground drainage and a greater depth to the water table exists. Less than the smaller amount is now being used on the Patterson Water Company project, in the northwestern part of the valley, where 88 per cent of the 16,000 acres is alfalfa. This project derives its water supply by pumping from the lower San Joaquin River, water is available throughout the growing season, and the soils generally are retentive loams and clay loams. The average net duty for alfalfa with an ample supply throughout the season is 3.0 feet in depth in the San Joaquin Valley.

Deciduous orchards and vineyards are sometimes so situated that they derive sufficient moisture from the soil without surface irrigation, but as the future demand for irrigation water will undoubtedly lower the ground water elevation, these areas will have to be irrigated from surface supplies. The number of irrigations for a full season with a regulated flow, will range from two to four, and the quantity of water applied to the land from one to two feet. The average duty for orchards and vineyards in the San Joaquin Valley is 1.5 feet in depth.

Cereals are frequently raised on the more retentive soils with one heavy irrigation and on less retentive soils with two applications of irrigation water. Corn and other general field crops usually require two to four irrigations. Cereals are sometimes followed by a crop of corn, beans, or other summer crops in which case the land which is double cropped receives from two to four irrigations. This practice is increasing with the development of full season supplies.

The net duty for cereals, corn, sugar beets, potatoes and other general field crops, ranges from one to two feet, with an average net duty for these, allowing for the increase in double cropping, of 1.5 feet in depth.

The gross use for 214,000 acres served by the Fresno-Gould Canal for the seasons from 1915 to 1919, inclusive, is less than two feet and averages 1.64 feet in depth. This area is highly developed and 55 per cent is in trees and vines. Other large and highly developed areas, that receive water from Kings River, have gross uses of less than two feet, and even with this amount of water some of the lower lands have become water-logged and are in need of drainage.

These considerations reveal that the average net duty for the entire San Joaquin Valley floor, considering the extent to which the various crops will be grown and the water requirements of these crops, is two feet in depth. This net duty agrees well with that obtained at the present time on areas which have satisfactory irrigation supplies, and are devoted to an intensive and diversified farming and have a reasonably good standard of irrigation practice and agricultural methods. An average net duty of two feet with a desirable distribution through the season, will result in less water being added to the groundwater, a reduction in the expense for drainage, a smaller seasonal fluctuation in the water table and a lower water table during the summer months, and it will still furnish ample moisture for plant growth.

Considerable data are available on the monthly use of water on a number of projects in the San Joaquin Valley, which are favored with an

adequate supply for the entire irrigation season and the deficiency during the latter part of the season on other well developed projects, can be estimated. There are 263 records, an equivalent of one year's record on 9,304,000 acres, of actual distribution of the seasonal use of water in this valley. There are also 24 estimates by consulting engineers, covering an undetermined acreage, on the monthly use for a full seasonal supply. These data have been fully considered, and the desirable monthly use, expressed in terms of per cent of the total seasonal supply, is:

January	0 per cent
February	2 per cent
March	5 per cent
April	11 per cent
May	17 per cent
June	18 per cent
July	18 per cent
August	15 per cent
September	10 per cent
October	4 per cent
November	0 per cent
December	0 per cent

SECTION 8.

WESTERN SLOPE OF THE SOUTHERN SAN JOAQUIN VALLEY.

Total agricultural area	971,000 acres
Area under irrigation in 1920	20,400 acres

This section is the portion of the western slope of the San Joaquin Valley that extends from near Buena Vista Lake on the south, to a point opposite Mendota on the north, and comprises portions of Kern, Kings and Fresno counties. Its surface rises gradually from the floor of the valley with increasing slopes towards the base of the Coast Range Mountains.

The larger part of the agricultural lands form a smooth sloping surface, which merges at the lower elevations into the flat lands of the valley floor. The general altitude varies from about 150 to 500 feet above sea level.

The run-off of the eastern slope of the Coast Range, which crosses this section, is concentrated in the channels of small intermittent streams, usually of not sufficient size to maintain well-defined channels very far down the slopes toward the trough of the San Joaquin Valley. A few of them have gravelly beds for several miles into the valley after their emergence from the foothills, but during dry years little or no water reaches the valley floor.

The soils are generally of heavier types and are mostly loams, silt loams and clay loams, underlaid by similar subsoils. They are free from alkali and are retentive of moisture. Their surface is generally favorable to cultivation and irrigation.

The climatic conditions are similar to those of the adjacent valley floor described in Section 7; the mean annual rainfall is somewhat less, however, averaging seven inches in depth.

Water is scant and very little of the area is irrigated. Because of the small rainfall, dry farming is precarious and but little is done. Most of the land is used for pasture. With irrigation the land is well adapted to growing alfalfa, deciduous fruits, small grain, sorghum and for the culture of vegetables.

The transportation facilities are the main line of a transcontinental railroad traversing the lower margins of this section and a branch line, crossing the southern end to Coalinga.

There is very little irrigated land in this section. The groundwater supply is very limited, and, if found at all, is at great depth below the surface. The development of irrigation for this section depends on the very limited supply from the intermittent streams of the eastern slope of the Coast Range, or on waters which may be brought in from outside sources. At best it will be expensive.

The water requirements are essentially the same as for the lands in the floor of the valley. The limited water supply, its high cost of development, and use on soils which are retentive of moisture, will result in a more saving use of water for this section than for other parts of the San Joaquin Valley. These considerations disclose that the average net duty of water for this section is 1.75 feet in depth.

The desirable monthly distribution in per cent of the annual supply is the same as that for the San Joaquin Valley floor, and is:

January	0 per cent
February	2 per cent
March	5 per cent
April	11 per cent
May	17 per cent
June	18 per cent
July	18 per cent
August	15 per cent
September	10 per cent
October	4 per cent
November	0 per cent
December	0 per cent

SECTION 9.

SANTA BARBARA, SANTA MARIA AND SAN LUIS OBISPO AREAS.

Total agricultural area	410,000 acres
Area under irrigation in 1920	25,000 acres

This section is on the Pacific slope of the Coast Range Mountains, and extends from the crest of this range to the ocean shore, and from the ridge west of the Ventura River on the south, to the confluence of the Nacimiento with the Salinas River on the north. Portions of Ventura, San Luis Obispo, Monterey and all of Santa Barbara counties lie in this section.

The agricultural lands are on the ocean shore between Santa Barbara and San Luis Obispo, in the valleys and flat bottom lands, and on the gentle slopes of low hillsides surrounding the valleys. These agricultural valleys are mostly at altitudes of less than 1000 feet, excepting the Cuyama Valley which is above 2000 feet.

The coastal range which traverses this section is formed largely of sedimentary deposits of shales, sandstones and conglomerates. There are, however, isolated granitic mountain masses. The soils formed from their erosion, are predominantly sandy loams, with loams and clay in some of the interior valleys.

The climate is moderate and equitable and there are no great departures from the mean temperatures. It exhibits the moderating influence of the Pacific Ocean, the average winter temperature being around 50 degrees. Fogs are common and conserve the soil moisture by retarding evaporation of water from the cropped area. The winter is the principal period of precipitation. The active growing season is long and without great extremes of heat. Dry farming is profitably practiced. The moist climate along the coast is favorable for the raising of grain, beans, sugar-beets and vegetables, and there are considerable areas devoted to the raising of these and flower seeds.

The growing seasons for the different crops overlap and in the aggregate extends throughout the whole year. The principal precipitation occurs in the months of November to March, inclusive, and averages over sixteen inches. The interior valleys and tablelands are suitable for raising deciduous fruit trees, sugar-beets and alfalfa, which require but one or two irrigations per season.

The available water supply is adequate for the coastal valleys, but is deficient in volume for the regions away from the coast. The trend of agricultural development is toward intensive cultivation of small farm units.

The use of water for the different crops varies from six inches or less for beans, vegetables, and other shallow-rooted plants grown along the marginal agricultural lands adjacent to the coast, to twenty-four inches or more for alfalfa in the interior valleys. The water requirements for lands in this section will be less than for Section 1, the Los Angeles area, which adjoins it on the southeast, and should be essentially the same as for Section 2, the San Diego area. The average net duty for this section therefore, is 1.5 feet in depth.

The desirable monthly distribution in per cent of the annual supply is:

January	2 per cent
February	2 per cent
March	2 per cent
April	5 per cent
May	12 per cent
June	16 per cent
July	20 per cent
August	16 per cent
September	13 per cent
October	8 per cent
November	2 per cent
December	2 per cent

SECTION 10.

SALINAS AND CONTIGUOUS VALLEYS.

Total agricultural area..... 296,000 acres
Area under irrigation in 1920.. 72,000 acres

Most of the agricultural lands of this section are located in the lower Salinas Valley in Monterey County, and extend from the confluence of Nacimiento and Salinas rivers on the south, to the mouth of the Salinas River on the north. There are other smaller areas of arable lands to be found in the valleys of Carmel, San Antonio, Priest, Bitterwater and Peach Tree, in Monterey and San Benito counties.

The soils of the Salinas Valley are derived from the rocks of the Coast Range which include a variety of shales, sandstones, limestones, schists, gneiss and granitic rock. The soils of the bottom lands and the alluvial delta in the lower portion of the valley consist of recent alluvial deposits eroded from the variety of rocks occurring in the drainage basin of the Salinas River. The soils range in texture from loose drifting sands to heavy clay adobes. With the exception of the lighter textured sandy types, they are of moderate to high organic-matter content and are productive under irrigation. Drainage conditions are not quite so favorable for fruits in the alluvial delta as in the more elevated lands and terraces, but the former is more favorably situated for irrigation and is underlaid by friable and permeable stratified sediments.

The average annual precipitation over the floor of the lower Salinas Valley is fifteen inches, of which over 80 per cent occurs from the first of November to the end of March. The rainfall during the remaining seven months is so small and uncertain that it is a negligible factor in nourishing plant life. Soil moisture is conserved by the prevalence of summer fogs; on the other hand, the evaporation of moisture is increased by the trade winds which enter the valley from Monterey Bay.

In common with many other parts of the state, cereals grown without irrigation constitute the principal crop. Here, as elsewhere, the yields from grain crops have decreased and other crops, many of which are irrigated, have taken their place. Conditions in the lower Salinas Valley are well adapted to the growing of such crops as alfalfa, sugar-beets, potatoes and beans, as well as deciduous orchards, and under a suitable system of crop rotation large returns are possible under irrigation. The greater portion of the agricultural lands of this section have adequate railroad facilities. The Salinas Valley is traversed from end to end by a main line railroad.

Water supply for irrigation may be developed from the surface flow or the storage of the flood flow of streams, and the pumping of underground water. Storage of the large quantity of flood water which is discharged annually into Monterey Bay, would also remove the flood menace which threatens destruction to property along the river banks. Pumping from underground water would provide an excellent irrigation supply as well as prevent injury through the water-logging of lands by too high a rise of the groundwater level such as has been experienced in other localities similarly disposed.

In the past, development under irrigation has been retarded by the large number of ranches of more than 10,000 acres each. Until recently, the sentiment has been opposed to irrigation. As time goes on, the large land holdings will be subdivided and a more intensive utilization of the land be brought about. The increased productivity of the lands under irrigation will gradually establish the practice throughout the section.

The measured net annual use is 1.82 feet in depth. This is the mean of five records and is the equivalent of one year's measurement on 5790 acres. These data reveal that the average net duty is 1.75 feet.

About nine inches of rain falls on an average, during the first four months of each calendar year, and for the crops now grown, little irrigation water is needed until the latter half of April, neither will water be needed, as a rule, after the last part of September. The irrigation season may, therefore, be said to extend from April 15th to September 30th, with a small use for special requirements in both March and October.

The desirable monthly distribution in per cent of the annual supply will approach that of the San Joaquin Valley, modified for a larger spring rainfall, and for the lower mean monthly temperatures that obtain in the Salinas Valley, and is:

January	0 per cent
February	0 per cent
March	2 per cent
April	12 per cent
May	18 per cent
June	20 per cent
July	20 per cent
August	16 per cent
September	10 per cent
October	2 per cent
November	0 per cent
December	0 per cent

SECTION 11.

SANTA CLARA AND ADJACENT VALLEY AREAS.

Total agricultural area..... 530,000 acres
Area under irrigation in 1920.. 147,000 acres

This section lies between the Pacific Ocean and the crest of the Mount Diablo Range, and extends in a southeasterly direction from San Francisco Bay, to the ridge dividing the watersheds of the Pajaro and Salinas rivers, and also to the lower part of the San Benito River, a tributary of the Pajaro River. It includes the agricultural lands of all San Mateo, Santa Cruz, Alameda and Santa Clara counties, most of Contra Costa County, together with small areas in Monterey and San Benito counties. These agricultural lands lie for the most part in the valleys of Santa Clara, Pajaro, Livermore, San Ramon, and Ygnacio, and on the coastal plains bordering on the southern portion of San Francisco Bay and skirting the shores of the Pacific Ocean.

The soils of these valleys consist of alluvial deposits derived from the rocks of the Coast Range, which consist mainly of shales and

sandstones, with minor associated areas of igneous rocks. These rocks generally contain considerable lime and the resulting soils have not been entirely leached of soluble materials. In many cases they are distinctly calcareous.

The soils have been distributed mainly as alluvial fan deposits by minor intermittent streams and by surface wash. They, therefore, occupy gently sloping areas marginal to the foothills and mountains, and are frequently traversed by somewhat deeply cut stream channels. In consequence, natural drainage conditions are well developed, though flat basin-like areas of poor drainage occur in regions adjacent to tidewater. The soils, which are of recent deposition and not materially altered by weathering in place, are of brown to black color, and of loam, clay loam, and clay texture with minor silty, fine sandy or gravelly variations. Prevailing texture and structure are such as to favor water-holding capacity and retention of moisture, under suitable cultural methods. Some of the heavier textured types, however, have pronounced adobe characteristics and demand careful management in irrigation and cultivation. Limited areas occur in which soil materials occupying the more elevated slopes, have been modified by weathering in place, leaving compact subsoils in which percolation and subdrainage is arrested, and which are less well adapted to tree fruits and the deeper rooted crops. The soils of these valleys are represented by a wide variety of types, which, owing to their pronounced physical character and to the special adaption to certain fruits, vine and truck crops, have materially influenced the development of agricultural and cultural methods.

The average annual amount of rain which falls on the agricultural lands of this section, is eighteen inches; of this total, about three-quarters occurs during the four rainy winter months of December, January, February and March; the four summer months of June, July, August and September are practically rainless, and have a mean precipitation of but half an inch, while the remaining spring and autumn months make up the balance, or one-quarter of the total.

The temperature is uniform. The mean annual temperature is 58 degrees, and there is less than 19 degrees variation between the mean temperature of the coldest month in winter, and the warmest in summer.

The transportation facilities of this section are exceptional. Three transcontinental railways traverse the locality, which have their terminals on the ocean harbor of San Francisco Bay, in the northern portion of the section. Numerous branch railway and feeder lines, sidings, stations and yards are distributed throughout the area. Many hard surfaced highways give ease of communication and opportunity for motor transport.

Marketing centers with storage plants, precoolers, ice and refrigerating plants, canneries and exaporators, are interspersed over the district and in some of the valleys, the line of communication is bordered by almost continuous urban settlements.

Forty to fifty years ago, wheat was the prevailing crop. Later, orchard trees were planted in the most favorable locations, and the fruit from these proved so profitable that the orchard area has been

greatly increased. Owing to the demand for truck crops and berries to supply the urban population around San Francisco Bay, about twelve per cent of the total irrigated area is devoted to the growing of these products. For the same reasons, dairy products are readily marketed at a profit, and about as large an area is planted to alfalfa and other forage or root crops as there is for truck farming. While fully a third of the cultivated area is still in cereals, the trend of development, influenced by more profitable returns, is in the direction of more deciduous orchards; prune trees are far in the lead and also more truck, vineyards and small fruit are being planted. When the greater part of the total area of agricultural lands is irrigated, the present trend of development indicates that sixty per cent of the section will be planted to deciduous orchards, fifteen per cent to grain and hay, ten per cent to truck and berries, ten per cent to alfalfa and other stock feed, and the remainder to vines and miscellaneous crops.

For the lands thus far irrigated, water has been obtained for the most part, by pumping from wells. This general practice has lowered the ground water level and prevented the water-logging of soils, except in a few limited areas. This draft on the underground basins, particularly in many parts of Santa Clara Valley, has been much greater than the natural replenishment resulting in a decided lowering of the water table, a lessening of the discharge of wells, and an increase in the cost of pumping water. While the streams are torrential in character, being high after heavy rains in winter and early spring and very low or without water in midsummer, many small and medium sized reservoir sites may be utilized for the storage of water. By storing a part of the run-off from non-tillable lands and conveying the stored water by gravity to arable valley lands in the immediate vicinity, a much larger area can be irrigated from the surface run-off than is now watered. The seepage losses from such reservoirs and gravity canals, and deep percolation losses from the irrigated fields, would tend to raise the ground water level in underground basins increase the area irrigated from wells, and decrease the present cost of pumping.

Taking into consideration the amount of the winter rainfall, the compactness of the arable soils and subsoils, the relatively low evaporation, and further that the greater part of the crops raised in the future will require a comparatively small quantity of irrigation water, the data disclose that the average net duty is 1.5 feet annually on the agricultural lands of this section.

The monthly use of water depends chiefly on the crops grown. Since the climatic and soil conditions are well adapted to the production of deciduous fruits, more especially prunes and apricots, it is reasonable to expect that this crop will predominate in the future as it does at present, and that it will influence to a large extent, the monthly distribution of the seasonal use of water. The large acreage devoted to prunes requires the greatest quantity of water in June, with more in September and October, than in July and August. Offsetting this unequal monthly distribution, the alfalfa and truck crops require a relatively large quantity of water in July and August.

Considering the records of the monthly use of water, and of consumption of electric power for pumping groundwater for agricultural purposes during the past few years, the desirable monthly use of irrigation water in per cent of the total seasonal supply is:

January	0 per cent
February	0 per cent
March	4 per cent
April	6 per cent
May	15 per cent
June	20 per cent
July	15 per cent
August	15 per cent
September	14 per cent
October	9 per cent
November	2 per cent
December	0 per cent

SECTION 12.

DELTA LANDS OF SAN JOAQUIN AND SACRAMENTO VALLEYS.

Total agricultural area	453,000 acres
Area under irrigation in 1920	390,000 acres

This section is located along and adjacent to the lower stretches of the Sacramento, San Joaquin and Mokelumne rivers. These lands lie south of Sacramento, west of Stockton, north of Lathrop and Tracy and extend westerly to Suisun Bay. They include portions of San Joaquin, Sacramento, Contra Costa, Yolo and Solano counties.

The agricultural lands of this section are of a flat surface conformation. Originally a tule marsh, the land surface of which was below sea level, occupied a very considerable part of the section. Numerous winding channels and sloughs connect with the several branches of the river, and divide this section into islands and peninsulas of a few hundred to several thousand acres in extent.

The banks along the channels have been built up through the deposit of sediment that takes place during the overflow from these channels, and these banks are usually several feet above the general level of the land lying away from the channels. The lands in the peninsulas rise above sea level and continually increase their altitude as they approach the body of land from which they project, but no part of Section 12 is more than a few feet above sea level.

Most of the area is now either fully or partly protected against overflow, occasioned by high tides and floods, by surrounding levees that have been built on or near the banks of the channels that make their devious way through this section Interior drainage of the excess rain water is collected by means of ditches, and removed by pumps, which also serve to collect and remove seepage waters from the rivers rising too near or above the surface level of the low lands.

The more elevated banks and the islands farthest up stream in the rivers are composed of a silt loam. The back or land side of the peninsulas merge into the same soil as the main body land, which is generally a sandy or silt loam. The main body of these islands and peninsulas is composed of a silt loam and decayed roots of tule and other aquatic

plants, and varies from soils in which the silt loam predominates, to lighter peat soil containing little mineral matter. The heavier peat soils along the margin of this section may attain a depth of ten feet, and are underlaid by sediment or clay. Much of the lighter peat soil will float, and is of great depth, underlaid with a coarser peat. The soils of this delta are known for their remarkable productiveness.

The climatic conditions differ from the remainder of the San Joaquin Valley, in that the summer temperatures are somewhat lower and the humidity is higher. The mean annual rainfall is about eighteen inches.

The most important crops are potatoes, asparagus, corn, barley, beans and celery. Some of the best orchards in the state are located on the higher lands adjacent to the river banks. Alfalfa is grown on the silt loam and heavier peat soils.

Excellent water transportation is available for nearly all the area, so that the products of the district can be cheaply delivered to Sacramento, Stockton or San Francisco. There are a number of good highways, and good railroad transportation facilities are available along the margins of this section.

The water supply for these lands consists of ground moisture replenished from rainfall and river seepage, and that taken out from the adjacent rivers or sloughs and delivered over or through the levees by siphons, pumping plants or culverts.

During the winter and spring months, the water level in the rivers and channels is considerably higher than the surface of the interior lands, and drainage pumps are operated to remove surplus rainfall and seepage water. Inundation or an excessively high water table is so prevented. Beginning in the late spring, and lasting through the remainder of the growing season, the water table is too low for subirrigation of the predominant shallow-rooted crops, and the dry top soil is therefore moistened by irrigation. Most of the area is irrigated by running sufficient water in small ditches to raise and maintain the water table at the desired depth below the surface. Some of the higher lands in orchard or alfalfa, are surface irrigated. The depth to the water table for much of this land is not over six feet, and is maintained nearly uniform throughout the growing season.

The high productivity of these delta lands encouraged early efforts toward their reclamation, and nearly all of the area is now organized in reclamation districts, which have constructed protection works against inundation by the high water in the adjacent channels, occasioned by floods and tides. The lands are generally intensively farmed and fully utilized. Future development will consist principally in construction of works for greater safety against floods, and in the extension of irrigation to all the lands in the delta.

Much of the land drains readily, and the surplus irrigation water which reaches the drains, is pumped back into the rivers or channels during the same period that irrigation water is also pumped into the district. Two years' records of the irrigation water pumped in and drainage water pumped out, of a typical district in this area, indicate a use of somewhat less than 1.5 feet in depth. These considerations disclose an average net annual duty for the entire section of 1.5 feet.

The monthly use of water is determined by the presence of surplus rain and seepage waters in the soil. Irrigation is not necessary during the periods in which the drainage pumps operate to hold the ground water plane down. For this reason irrigation is not started as early as in the adjoining parts of Sacramento and San Joaquin valleys. The irrigation season is therefore shorter, and because of the nature of the crops, the maximum use occurs in July.

The desirable monthly distribution of the irrigation supply, in per cent of the total seasonal use, is:

January	0 per cent
February	0 per cent
March	0 per cent
April	0 per cent
May	8 per cent
June	22 per cent
July	30 per cent
August	25 per cent
September	15 per cent
October	0 per cent
November	0 per cent
December	0 per cent

SECTION 13.

SACRAMENTO VALLEY FLOOR.

Total agricultural area.....2,694,000 acres
Area under irrigation in 1920.. 662,000 acres

This section comprises about one-third of the total agricultural area of the great central valley, and contains one-eighth of the total agricultural area of the State of California. It extends from the delta of Sacramento River on the south, to Redding on the north, a distance of 170 miles; it contains land in Solano, Sacramento, Placer, Yolo, Sutter, Yuba, Colusa, Glenn, Butte, Tehama and Shasta counties.

The average slope of the floor of the valley from north to south, is about three feet per mile, attaining to a maximum of five and one-half feet and a minimum of less than one foot. From Redding to the mouth of Stony Creek, a distance of about ninety miles, the Sacramento River flows through its deepest cut in the valley floor, but below this point, through most of its course, the river occupies a ridge higher than, and nearly parallel to, troughs in the bottom of the overflow basins on either side. The flood area on the west side of the river, is separated into two basins, the Colusa on the north and the Yolo on the south, by a ridge of detritus deposited by Cache Creek. There are four basins on the east side of the river, which are known from north to south as the Butte, Sutter, American and Sacramento basins, and are separated by the Marysville Buttes, the Feather and American rivers respectively. On the west side of the river, there are alluvial fans or ridges of considerable area at the mouths of tributaries. These fans or ridges have slopes that are much steeper, and elevations that are greater, than the adjacent floor of the valley; but most of the irrigable lands of the section are flat in slope and lie below the 200-foot level. They

attain a maximum of 550 feet in the extreme north, and drop to a minimum in the south, of less than 15 feet in elevation.

Most of the soil of this section is sedimentary in origin. About thirty per cent of the area is clay or clay adobe; of the remainder, about one-half is silt, sandy or gravel loams, and the balance a clay loam. Centrally located, for the most part in the poorly drained sections of the valley, are considerable areas in alkali lands, but in these areas the highly concentrated form of salts, injurious to plant growth, is not common. On much of the land, good crops of grain have been produced by dry-farm methods, and during the last few years large areas have been successfully developed to rice culture, lands that hitherto have been thought unsuitable to agriculture. The area of alkali land, which is irreclaimable and of no agricultural value, is a very limited portion of the entire section. Hardpan and indurated clay subsoils are encountered at various depths in many localities throughout the valley.

Climatic conditions are very similar to those of the southerly portion of the great valley, with the exception that the rainfall is somewhat greater. Of the annual precipitation, 80 per cent occurs from November to March, inclusive. The range is from about fifteen inches in the southern, to thirty inches in the northern part of the section, and averages twenty-two inches for the whole area. The mean annual temperature is 63 degrees, with a range of monthly means from 46 degrees in January to 80 degrees in July. Minimums below 20 degrees and maximums of 110 degrees, are of occasional occurrence. During the rainy season the prevailing winds are from the south. There are drying north winds which vary in intensity during the spring and summer months. The latter are of low humidity and have a decided influence in increasing the water requirements of the entire section.

The growing season is long and has an average frost-free period from the middle of February to the last week in November.

At the present time most of the land is dry-farmed to grain. Of the irrigated portion, about one-fifth is devoted to rice, and the balance to alfalfa, fruits and miscellaneous crops. There are portions of the section which appear to be particularly adapted to specialized crops, such as rice, olives, almonds and certain deciduous fruits, and these localities are gradually developing their specialities. The rice-growing area is located largely in South Glenn, South Butte, Colusa, Sutter and Yolo counties. Oranges are grown in Glenn and Tehama counties; olives are a specialty in Sutter, almonds in Yolo, and in nearly any one of the counties some particular fruit predominates. Alfalfa is a stable forage crop that can be successfully grown on most of the area, if the moisture conditions are made favorable for it.

The trend of development indicates that a large portion of this section, when irrigation supplies have been developed for its watering, will be devoted to general crops and to the production of staple foodstuffs, dairy and meat products.

Transportation facilities are excellent. There are two transcontinental rail lines, four branch lines, four electric railways and numerous highways, together with water transportation on the Sacramento River to San Francisco Bay.

The principal sources of water supply are the Sacramento River and its tributaries. The most important tributaries on the east side are the Pit, Feather and American rivers; on the west side the Thomes, Stony, Cache and Putah creeks. These streams have large flows during the winter and spring, but the summer flows dwindle to almost nothing in the Coast Range streams, and in the Sierra streams, to small fractions of the winter discharge.

Natural drainage conditions are very fair in the higher ground at the rim of the valley, but in the low land of the overflow basins, the heavy subsoil and low elevation of the land require particular attention to artificial drainage.

Prior to 1880, water was used for irrigating but a few small areas in the Sacramento Valley. The works were crude, and the lands irrigated were in small tracts adjacent to the streams. In 1887, an attempt was made to bring a larger area in Glenn and Colusa counties under irrigation through the organization of the Central District under the State Irrigation District Act. Difficulties in financing the district caused construction work to be abandoned in 1891, but some land was brought under irrigation and continued the use of water. In 1903, the works were taken over by a land and water company which was succeeded later by a number of irrigation districts, the largest of which is the Glenn-Colusa District. In Glenn and Colusa counties, there are now six districts organized under the state law and one constructed under the Federal Reclamation Act, and their irrigation works are practically all completed. This development has taken place since 1910.

On the east side of the river, development started earlier, mostly under private enterprise. It has also progressed rapidly during the past ten years. There are now considerable areas which are served by pumping ground water from wells. As a whole, the irrigation works already constructed in this section are of a capacity far exceeding the unregulated water supply, and, unless in the future, reservoirs are constructed to store winter floods, the rapid development now in progress will be checked or may cease altogether.

The average measured annual use for this section is 3.88 feet in depth, but the area on which these measurements were made comprises a much larger percentage of land in rice than will occur on the full development of the section.

About 200,000 acres is the maximum which will be devoted to rice culture. Of this no more than one-half, to at most three-fourths, will actually be planted to rice each year; the balance will be either fallow, or planted to crops on which no water will be used, in order to destroy the water grass. Use of water for rice has been from four to seven feet per year and averages around six feet in depth. For the whole area primarily devoted to rice, the average annual water requirement is three feet. The average net duties for other crops are: orchard and vineyard, 1.5 feet; alfalfa and general crops, 2.7 feet; rice, for the portion of land in crop, 6 feet, or for the total area devoted to rice, 3 feet. Some citrus fruits will be grown, but the amount of water required by these in excess of 1.5 feet should be offset by the much larger area of other fruits requiring less than this amount. Based on the trend of development

and these considerations, the average net annual duty of water for the entire section is 2.25 feet in depth.

Much data have been collected on the monthly use of water. During years when there is a short rainfall after January, some water is used prior to April 1st, but the irrigation season under average conditions opens about April 1st and closes in October. Oranges and lemons usually require water after October, but the area on which these crops will be grown, is small and does not appreciably affect the general distribution. The desirable monthly use is indicated by the measured use in the past. Some projects or systems serve primarily rice lands, while others supply water for general crops with no rice. The monthly use on these projects, combined in the proper proportion for rice and other crops, determine the desirable monthly distribution of the annual supply.

The desirable monthly distribution in per cent of the seasonal supply for this section, is:

January	0 per cent
February	0 per cent
March	1 per cent
April	5 per cent
May	16 per cent
June	20 per cent
July	22 per cent
August	20 per cent
September	12 per cent
October	4 per cent
November	0 per cent
December	0 per cent

SECTION 14.

SIERRA FOOTHILLS, AND ROLLING PLAINS EAST AND WEST OF SACRAMENTO VALLEY FLOOR.

Total agricultural area.....2,305,000 acres
Area under irrigation in 1920.. 87,000 acres

This section includes all of the agricultural lands above the floor of the Sacramento Valley, lying along and including the foothills of both the Sierra and Coast Range mountains. It extends from the Mokelumne River on the south, to the limits of the great central valley on the north near Redding, and thence around the north end of the valley and down the western side to Cache Creek near Woodland. About four-fifths of the land lies on the east side of the valley floor between the Mokelumne and Feather rivers. The largest compact area on the west side lies in southern Shasta County.

The arable lands of this section are not continuous, but consist for the most part, of detached areas of low rolling hills and small valleys somewhat broken by gullies and canyons. The variation in altitude is great, ranging from around 100 feet near the floor of the valley to 2500 feet in the vicinity of Nevada City, with isolated small areas above 4000 feet. However, most of the lands lie below the 600-foot contour.

The soils are primarily of weathered rock in place. In the valleys, there are sedimentary and alluvial deposits, but the parcels so formed are comparatively small. A few minor areas of sandy loams occur on the higher slopes and along the margin of the valley floor. Shallow soils occur on some of the foothill lands, but generally the soils are of good depth.

Climatic conditions below the 1500-foot elevation, do not vary greatly from those of the floor of the valley. The summers are long and dry and most of the precipitation occurs between November and April. Precipitation generally increases with altitude and ranges from twenty inches to forty-five inches, and averages thirty-two inches per year. Temperatures below the 1500-foot level vary little from those of the floor of the valley. For the whole section the annual mean is 57 degrees. Lying along the foothills, are warm belts of considerable extent, where the winter temperatures are notably higher than the average for the valley floor, while in the higher altitudes much lower temperatures are experienced. The growing season for the section as a whole is somewhat shorter than for the valley floor. The average frost-free period is from the latter part of March to the middle of November, excepting for limited areas located at the higher elevations.

The variations in elevation, rainfall and temperature, make a wide range of crops possible in this section. Citrus fruits are successfully grown throughout the thermal belt, which varies in altitude but is always below the 1000-foot contour. Apples, pears and plums are extensively grown on the higher elevations, and peaches, cherries, prunes, vines, olives and a great variety of fruits are grown on all but the highest elevations. Alfalfa thrives on lands of suitable surface conformation and texture. Large areas not irrigated, are devoted to grain and pasturage. Fruit growing will dominate future irrigation development.

Transportation facilities are excellent, with two transcontinental railroads through the section and electric lines traversing portions of the area.

The surface conformation of this section is, in general, very favorable to natural drainage and, with proper precautionary measures along the valley margin, no serious water-logging of land should occur.

The Sacramento River and its tributaries constitute the available water supply for this section. The first irrigation practiced in the section was undertaken as a secondary use of water-supplies developed for mining purposes. The water was applied to small tracts planted in fruits and vegetables and located along the main streams. Many of the old mining ditches are still in operation, but water service for irrigation and power has long been their principal use. A large portion of the irrigated land of this section is served through privately-owned irrigation works. There are also many small cooperative farmers' ditches and a number of irrigation districts organized under the State Act. Of the later all are of recent origin, except the Browns Valley District, which was organized in 1888. But a comparatively small part of the agricultural lands are irrigated. There has been great impetus

to irrigation development during the past ten years, and a number of irrigation projects of magnitude are at present pending.

There is quite complete data on the quantity of water used in growing the various crops for which the section is noted. The water supply for the land now under irrigation is, with few exceptions, ample, and the amount applied closely represents crop needs. Measurements indicate that the use of water now ranges from 1 foot to 2.5 feet in depth, depending largely on the variety of crops and soil. The average for all measurements is 1.47 feet deep. It is not likely that, as this area is further developed to irrigated crops, there will be much change in the relative proportion of crops now grown, and the water requirements will be about the same for the future as in the present. The average annual duty of water for the entire section is 1.5 feet in depth.

The desirable monthly distribution expressed in per cent of the seasonal irrigation supply is well indicated by the past use on irrigation systems, and is:

January	0 per cent
February	0 per cent
March	2 per cent
April	2 per cent
May	15 per cent
June	20 per cent
July	22 per cent
August	20 per cent
September	13 per cent
October	5 per cent
November	1 per cent
December	0 per cent

SECTION 15.

NORTH COAST AREA.

Total agricultural area	624,000 acres
Area under irrigation in 1920	22,300 acres

This section extends from San Francisco Bay to the Oregon line, and comprises the westerly slope of the Coast Range Mountains north of San Francisco. It contains the drainage basins of the Eel, Russian, Mad, Salmon, and the lower portions of the Trinity and Klamath rivers, together with those of Sonoma and Napa creeks.

The elevation of the arable land varies from just above sea level to 1500 feet, but most of it lies below elevation 500 feet. The section is divided into five main basins, one on each of the Russian, Eel and Mad rivers, and on Sonoma and Napa creeks. There are numerous small mountain valleys throughout the area, the largest of which is adjacent to Clear Lake. The basin of the Russian River contains the largest compact body of tillable land. All parts of the section are more or less cut up by the numerous tributaries which enter the main streams.

In general the soil is of sedimentary formation and quite fertile.

The temperatures over the coastal valleys are moderate and quite uniform throughout the whole section, and they are modified by the proximity of the ocean. The mean annual temperature is 56 degrees. The rainfall, occurring mostly between November and April, reaches

100 inches or more in the extreme north and averages over 35 inches per annum for the whole section. While the summers are long there is little extreme heat. Along the coast there is some rainfall during the summer months. Over a considerable area summer fogs have an influence on moisture conditions by reducing evaporation and plant transpiration.

The growing season is somewhat shorter than for the Sacramento Valley to the east. The average frost-free period is from the first week in May to the latter part of October.

The cultivated areas in the southern or main portion of the section, are devoted to growing fruits and grapes. In the north, forage is the principal crop. Transportation and marketing facilities are good for the area south of Humboldt County. Ocean and rail transportation are available for the coastal regions of most of the northern part of this section.

Because of the sloping surface conformations of the agricultural lands in this section, the drainage of the surplus water has presented no difficulties. Water from the Russian, Eel, Mad and Klamath rivers and their tributaries will amply supply irrigation needs.

Due to greater rainfall, irrigation development has not received the impulse that it has in other parts of the state. While orchards and vineyards thrive without irrigation, especially near the coast, it is a distinct advantage to irrigate all crops wherever accessory waters are available. In time, irrigation will be the general practice throughout most of the section.

The average measured net annual use is 1.52 feet but the considerations here presented reveal that the desirable net annual duty of water for this section is 1.25 feet in depth.

The desirable monthly distribution of the irrigation supply, in per cent of the total seasonal use, is:

January	0 per cent
February	0 per cent
March	0 per cent
April	10 per cent
May	20 per cent
June	20 per cent
July	20 per cent
August	17 per cent
September	11 per cent
October	2 per cent
November	0 per cent
December	0 per cent

SECTION 16.

NORTHEASTERN MOUNTAIN-VALLEY AND PLATEAU AREAS.

Total agricultural area.....1,598,000 acres
Area under irrigation in 1920.. 333,000 acres

This section extends from near the crest of the Sierras north of Lake Tahoe, to Oregon and Nevada, and consists of mountain valleys and plateaus of the northeastern part of the state; it includes all of the arable lands of Siskiyou, Modoc and Lassen counties, practically all of

Sierra and Plumas counties, and a portion of the lands in Shasta County.

The agricultural lands are located on plateaus and in mountain valleys that range in elevation from 2,000 to 5,000 feet. Generally the slopes are moderate and the larger areas of agricultural land are comparatively level. Many lakes are scattered throughout the section.

The soils are formed principally from the weathering of volcanic rocks and are generally light and easily tillable. There are many tracts of swamp lands which require drainage before they can be cultivated, but when reclaimed, are very fertile.

There is a wide variation in the annual precipitation, ranging from less than 14 inches in the northern part of the section to more than 40 inches in the southern part. The annual average is 22 inches. Temperatures are low with great extremes between summer and winter. The annual mean is 48 degrees. The growing season is short. The average frost-free period extends from the middle of June to the last week in August.

About five-sixths of the area lies within the arid belt in which little can be grown without irrigation. The land now under irrigation is almost entirely cropped to pasture, hay and grain, and its ownership is in large tracts. Climatic conditions will limit the introduction of new crops. Only fair transportation and marketing facilities are afforded a large portion of the area.

With the extension of irrigation, the water-logging of much land and the accumulation of alkali at the ground surface is apt to occur over large tracts in this section.

This region is principally dependent for its water supply upon small streams and the headwaters of the Shasta, Pit and Feather rivers; and this source of supply has reached its maximum development unless winter flood waters are stored.

Water has been used for irrigation since the early settlement of the section, but only within recent years has development been rapid. Much of this in the past has been through the cooperative efforts of the farmers. Some large projects have been undertaken by private interests, and plans have recently been formed for extensive projects by irrigation district organizations.

The present use of water ranges from 1.25 feet to about 2 feet in depth. The average for the section, determined from twenty-six records equivalent to one year's measurements on 437,200 acres, is 1.30 feet. Taking into account the shortage of water that now exists during the latter part of the season over a very large area in the section, crop requirements, prevailing temperatures, rainfall and other climatic conditions, and past use, the average net annual duty of water for this entire section is 1.75 feet in depth.

The monthly distribution of the annual supply is indicated from twenty-six records, equivalent to one year's record on an agricultural area of 306,440 acres. These should be increased, however, on account of the short water-supply late in the summer.

The desirable monthly use, expressed in per cent of the total seasonal supply, is:

January	0 per cent
February	0 per cent
March	0 per cent
April	3 per cent
May	14 per cent
June	24 per cent
July	26 per cent
August	21 per cent
September	12 per cent
October	0 per cent
November	0 per cent
December	0 per cent

CHAPTER VI.

NET AREA IRRIGATED IN LARGE AGRICULTURAL DISTRICTS.

Contingent to an intensively developing agricultural community; the rural and urban dwellings, routes of communication and transportation, industries, and improvements, occupy an increasingly larger portion of the total area. The locality's natural resources enhance in value, augmenting the wealth with the increasing income derived. The riches received and credit created are spent in enterprises, the products of which are essential to agriculture, or in manufactories, canneries and evaporators, or other industries, to further prepare the agricultural product for the use of the public. Progress is further reflected in the appearance and development of facilities for the curing, chilling, storage and sale of the farm product; in the extension and improvement of means of transportation; in the construction of warehouses, sidings, yards and freight terminals. These improvements as they are inaugurated, require that areas of agricultural lands be given up to industry.

More roads are required; cities and towns extend their boundaries; villages arise to become towns, develop into cities, swarming with inhabitants who find employment in manufactories and industries developed coincident to, or as consequence of, the prosperity initiated with the successful agricultural expansion. While the number of small farm holdings are increased, the land is more vigorously cultivated, and production per acre is enhanced; the farm buildings needed for this greater activity, occupy a larger proportion of the cultivable area. The total value of improvements made, wealth created, and income derived from agriculture, vastly increases but the farmed area tends to diminish with the continuance of intensive agriculture. At the same time an opposing tendency comes into action, directed towards increasing the farmed area by bringing new areas into cultivation, previously unprofitable to farm, but now productive through the demand created by extended markets. These tendencies effect contrary results, one making accretions to the cultivated area and the other causing subtraction therefrom, largely neutralizing as communities mature. In the end, the conclusion is inescapable that all the cultivable lands will not eventually be planted to crops, for roads, canals, warehouses, railroads, farm buildings and dwellings, villages, towns and cities there must be, and these will increase, but irrigation water is required only for the cropped area.

The extent of settlement which will prevail in the future, may be conceived only by comparison with the rise and growth of communities which at this day have reached a stage of fairly dense population. The Santa Clara Valley, in Central California, is one of the highly developed farming areas of the state, and here eight per cent of the total agricultural lands are occupied by cities and towns, and these are still growing. In the San Gabriel Valley, in southern California, a

rich farming area tributary to Los Angeles, seven per cent of the total agricultural area is within the boundaries of cities and towns, and these are growing at an accelerated rate.

There are lands that are naturally unfit for cultivation, such as rocky and alkali spots, high knolls and stream beds. These will never be irrigated. Further, in each season a portion of the total area will remain fallow, other portions will be planted but not watered, and irrigation water will not be required for either. In a closely-settled section, the sum total of the unirrigated land may sometimes be a very considerable part of the total area.

Since cities of mature growth and dense population use water about equal to that required for irrigating crops on an equal area, the total consumption of water in any district for both domestic and irrigation supplies will not become much less as agricultural land is relinquished for city development. The expansion of less mature and more disperse towns will, however, tend to decrease the water consumption for the locality. Because of the great complexity of these considerations and the probability that the use of water in the centers of population will approximate that on an equal area of agricultural land, the future water requirements of large areas for both agricultural and domestic purposes, may best be estimated as the irrigation requirements of the net area which will eventually be irrigated, plus the areas of the cities, towns and villages of the ultimate development.

TABLE 3. PORTION OF AGRICULTURAL AREAS THAT REQUIRE A WATER SUPPLY.

Agricultural areas.	Gross area within the district boundaries. Acres.	Land that will not require water being absolutely unfit for irrigation. Acres.	Irrigable areas occupied by improvements outside of population centers. Acres.	Net area requiring a water supply. Acres.	Net Area requiring a water supply in per cent of gross area.
VALLEY FLOOR AREAS.					
Consolidated Irrigation District	151,500	3,000	7,425	141,075	93
Fresno Irrigation District	215,205	9,730	11,770	193,705	90
Merced Irrigation District	190,000	10,000	9,400	170,600	90
Turlock Irrigation District	178,665	9,100	8,900	160,665	90
Modesto Irrigation District	81,183	7,183	3,700	70,300	86
Orland Project, U. S. R. S.	26,597	4,823	1,800	19,974	75
Imperial Irrigation District	603,840	88,840	25,750	489,250	81
James Irrigation District	27,260	5,260	1,100	20,900	77
Glenn-Colusa Irrigation District Jacinto Irrigation District Provident Irrigation District Compton-Delevan Irrigation District Maxwell Irrigation District Williams Irrigation District	167,685	18,400	7,400	141,885	85
South San Joaquin Irrigation District	71,112	11,000	7,112	53,000	75
INTERMEDIATE AREAS.					
Oakdale Irrigation District	74,246	12,000	3,110	59,136	80
Waterford Irrigation District	16,040	4,940	550	10,550	66
FOOTHILL AREAS.					
Fairoaks Irrigation District	4,000	800	160	3,040	76
Happy Valley Irrigation District	18,210	4,000	710	13,500	74
Nevada Irrigation District	208,360	76,803	6,250	125,307	60

To aid in estimating future total water requirements, Table No. 3, "Portion of Agricultural Areas That Require a Water Supply," has been prepared. This table lists the projects on which information was obtained, on the gross area, areas unfit for irrigation, and areas of irrigable land devoted to other purposes than agriculture or urban development.

Of the projects listed in the table, the Consolidated Irrigation District and the Fresno Irrigation District, illustrate the segregations of land that prevail on the flat valley floors of the state. Formed in the early days, to include lands requiring the least expenditure for development, their project boundaries enclose a greater proportion of tillable land that is suited to irrigation than do projects that were organized later. In the Consolidated Irrigation District, but 2 per cent of the gross area is unfit for irrigation and 4 per cent in the Fresno Irrigation District is deductable for the same reason. Deducting with these, the area occupied by improvements, leaves 93 per cent and 90 per cent for the Consolidated and Fresno districts, respectively, as the per cent of the gross area in these projects requiring irrigation waters. The percentages applying to these projects represent the maximum irrigable area within project boundaries when they are of appreciable size, and include the lands that are the more readily developed.

The conditions obtaining on the South San Joaquin Irrigation District are those on land comprised within a district formed within the past decade. The areas included are more or less residual lands, remaining after other projects had been organized. Here 15 per cent of the gross area is unsuited to irrigation, and but three-fourths of the land within the project boundaries require an irrigation water-supply. Of recent organization, this district is made up of a greater proportion of unirrigable land, and the percentages found approach closely to the lower limit of irrigable lands within the boundaries of projects located upon California's flat valley floors.

Between the valley floor and the foothills proper are lands, the character of which is represented by conditions on the Waterford Irrigation District. Of this district, comprising 16,000 acres, one-third is deductable as land unsuited to irrigation. Similarly located, on the transitional regions between valley floor and foothill slope, the Oakdale Irrigation District, comprising 74,200 acres, has 12,000 acres, or one-sixth of its gross area unfit for irrigation. These two projects, analogously located, mark the extremes of the per cent of these areas that require accessory waters. Oakdale, with the greater proportion of good land, can utilize irrigation waters on 80 per cent of the area within its boundaries, while Waterford, including more of the residual lands, left after other districts had been formed, requires water for but 66 per cent of its area.

The Nevada Irrigation District, in the foothills of Nevada County, comprises lands that extend from 300 feet to 3,000 feet above sea level, and includes within the 208,600 acres of this project, the upper margin of the sloping lands that are susceptible to irrigated agriculture. In this district, 37 per cent of the lands are unfit for irrigation, and but 60 per cent of the entire area within the project boundaries will require

irrigation waters. The segregation of lands in this district illustrates the condition obtaining on a foothill project of extensive area and probably is representative of the projects located in such regions.

Considering that the projects here listed were organized to include the better agricultural lands and that the remaining areas of the state have a greater proportion of poor land, it may be concluded that the segregations found, are more favorable to high percentages of irrigable land than in districts formed in the future and the net area requiring irrigation waters, of the gross irrigable area of California, will be less than the mean of the percentages found listed in the tabulation.

CHAPTER VII.

ENDURABLE DEFICIENCIES IN AN IRRIGATION SUPPLY.

Many communities, dependent upon irrigation for their prosperity, have successfully endured the shortcomings of a deficient water supply. The plants grown in the farming communities that have endured these deprivations, do not progress to a harvest stage of equal bearing as compared to plants that have been adequately supplied with moisture. Shortages of water, while inimical to the best needs of the plant through retarding growth and reducing the fruits, are not conditions, the consequences of which cause the plant to immediately languish and die.

There is a certain indefiniteness about the necessity, in both time and amount, in the practical application of irrigation waters, and, through the physical agencies at work and the resourcefulness of the plant, a scarcity of soil moisture does not lead to corresponding diminution of the harvest. A full irrigation supply furnishes much more water to the soil than is needed for plant growth. The excess water applied to the soil disappears through evaporation from the moist ground surface, and through percolation to depths beyond the reach of the plant roots. The division of the applied water between that used by the plant, and that not directly aiding in plant growth, is circumstantial, so that a reduction in the amount of applied water does not necessarily mean a corresponding reduction in the amount of water obtained by the growing plants. The manner of spreading the applied water, the time period through which the application is made, the weather conditions, and the dryness of the soil at the time of irrigation, all affect the relative division of water applied between that immediately supporting plant growth and that aiding indirectly by supplying the water necessary for dissipation by evaporation and percolation.

The manner of applying water and the time period of application, can both be changed to effect a smaller proportion of losses by increasing the expense of applying the water. Even the dryness of the soil can be mitigated by increased expense for cultivation of the soil surface. Thus by the expenditure of more money than usual, the actual water reaching the growing plants may not have to be particularly reduced, although there is an acute shortage in the total water customarily applied. The avoidable losses can be much reduced through more extended preparation of the land previous to irrigating, and by the expenditures of adequate sums in the construction of pipe conduits, lined ditches and channels for the conveyance of water to the land, and for the distribution and application of the irrigation water to the crops.

With such conservation aided by the elastic ability of growing plants to sustain life and to function under less than the most favorable conditions, the seriousness of partial shortages in irrigation supplies is removed. Periods of drought that occur only once in several years,

while effective in reducing the yield, are transitory in effect and do not have the destructive results in the irrigated areas, which a continued shortage of water would have.

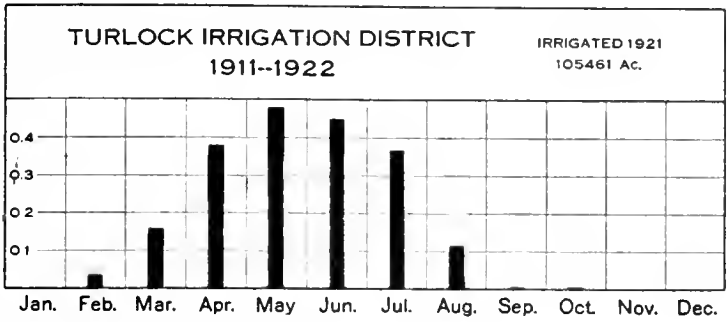
Plate II, "Average Deficiency in Irrigation Supply Endured by Successful Enterprises," presents in graphical form the distributions of water that have actually been made, and the desirable proportioning of a full water supply between the months of the year, and by the difference obtained through comparison, the deficiencies endured on several projects appear. The diagram is divided into months, January to December, each month having an equal space. In these spaces black bars have been drawn upwardly from the base line to give a picture of the per cent of the total yearly supply that was spread upon the land in any one month. The longer lengths of these bars as they extend upwardly from their common base line, represent greater per cent of distribution for the monthly interval in which they are drawn. The numerical per cent, corresponding to any bar, is found by following the intercepted lines that are drawn across, above and parallel to the base line, to the left border, where the per cent is given in figures. In a like manner, the red bars joining the black, sometimes exceeding these in length, sometimes falling short, represent the desirable distribution.

The full supply to which the water used by these projects has been compared, is that deduced in the foregoing chapters on the duty of water and the distribution of its use throughout the year. All the data that it was possible to collect, were here assembled and analyzed to determine the irrigation requirements of all parts of the state. The average values deduced for a full supply represent desirable practice of the present day.

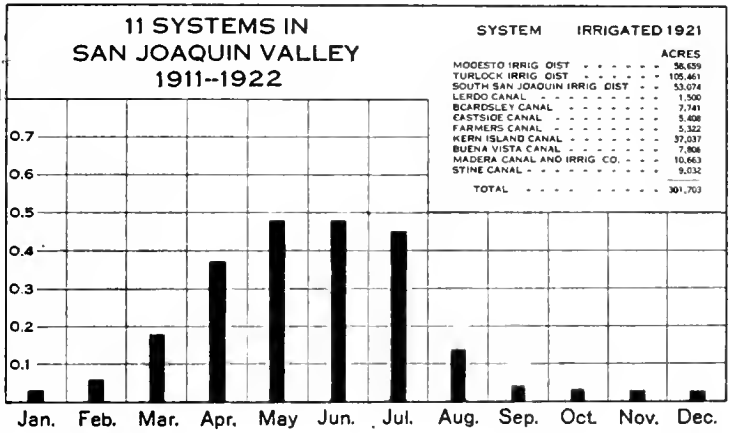
The upper section of Plate II, shows the average deficiency sustained by the Turlock Irrigation District, one of the oldest projects in the state, and one which has never enjoyed a full season's supply, although it is a growing and prosperous community. Similarly, the middle section of Plate II, sets forth the average deficiency in supply through the latter part of the season, sustained by eleven systems in the San Joaquin Valley which have a total irrigated area of a third of a million acres. It is seen that the heavy deficiency has been successfully endured through the latter part of the growing season by these projects, and they are generally known to be growing and prosperous.

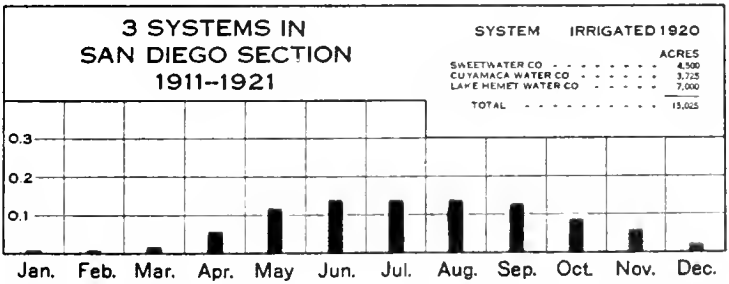
The average figures for three projects in the San Diego section, presented on the lower part of this plate, show that shortages have been successfully endured there through the entire season. Differing from other projects that have had a copious supply available during the early summer season, these districts have prospered with a less than desirable supply during the entire year. Nevertheless, these projects are located in and are a part of a region that has had a continuous and greatly accelerated growth.

The distribution through the months, of the seasonal supply, as practiced in the various sections of the state, is shown on Plate VII, "Monthly Use of Annual Irrigation Supply." Here, as on Plate II, the black bars represent average monthly supplies used, and the desirable quantity for use during the particular month is depicted in red.



Monthly supply of water in feet depth on land.



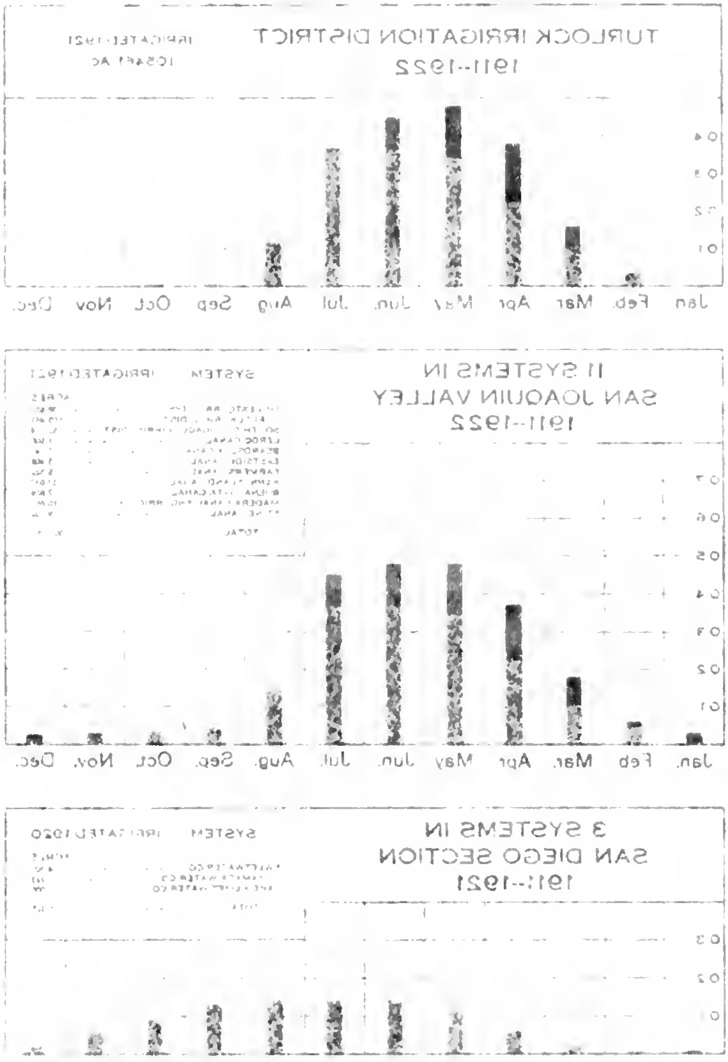


AVERAGE DEFICIENCY IN IRRIGATION SUPPLY ENDURED BY SUCCESSFUL ENTERPRISES

AVERAGE MONTHLY SUPPLY USED ▬▬▬

DESIRABLE MONTHLY SUPPLY

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER 889—1921 STATUTES



AVERAGE DEFICIENCY IN IRRIGATION SUPPLY ENDURED BY SUCCESSFUL ENTERPRISES

AVERAGE MONTHLY SUPPLY USED
DESIRABLE MONTHLY SUPPLY

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION

As this plate shows, the supply has been deficient in nearly every section of the state during the latter part of the summer. In many of the sections experiencing these deficiencies, a large amount of water was applied to the land during the fore part of the summer when there was ample flow in the streams, apparently in an endeavor to store soil moisture for the anticipated shortage of the latter portion of the season. Not only have there been shortages during the latter part of the season in many of the large projects, but, during the years of extreme drought and consequently reduced stream flow, many of the districts have been extremely short in total seasonal supply. During the shortage of 1920 in the Sacramento Valley, when there were 215,000 acres under irrigation from the main channel of the Sacramento River, much of this in rice, the amount of water was decreased twenty-four per cent compared to previous seasons, during the critical portion of the summer, without any damage to the crops.[1] In other sections of the Sacramento Valley, where the 1920 shortage was more acute, the use was decreased more than fifty per cent, without damage to fruits and cultivated crops and with little permanent damage to alfalfa. Such facts are conclusive that the supplies, deducted for the various sections of the state in Chapter V, provide a more favorable supply, more advantageously distributed through the season, than these districts at present enjoy. Such full supplies would furnish irrigation water in more ample quantities than many of the most prosperous irrigated sections of the state have ever had, and such supplies for every season, including years of greater drought, would afford more advantageous conditions than those under which all but the most favored of communities in the state have lived and prospered.

[1]Report of water master of Emergency Water Conservation Conference on file in the office of Division of Engineering and Irrigation.

TABLE 4. PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP

Stations listed in order of numbers on map, Plate IV.
For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation
Number.		Feet.	Years.		Inches.	Inches.
1	Fort Bidwell	4,640	36	1867-1921†	18 31	17.20
2	Cedarville	4,675	27	1894-1921	13 13	14.70
3	Alturas	4,460	15	1904-1919	12.34	14 20
4	Madeline	5,270	13	1908-1921	14 60	17 50
5	Clear Lake (Modoc County)	4,533	2	1907-1909	13 54	15 38
6	Pittville	3,600	2	1908-1910	18 60	20 68
7	Fort Crook	3,381	12	1857-1869	22.83	20 74
8	Macdoel	4,258	8	1907-1915	13 96	13 10
9	Hornbrook	2,154	28	1888-1916	14 74	13.60
10	Montague	2,450	30	1888-1921†	12 26	11 60
11	Yreka	2,625	40	1872-1921†	17 57	18.10
12	Edgewood	2,955	22	1888-1915†	20 34	19 14
13	Sisson	3,555	32	1889-1921	36.56	35 20
14	Berryvale (Sisson)	3,555	2	1881-1883	28 76	38 34
15	McCloud	3,270	10	1911-1921	46 72	50 00
16	Dunsmuir	2,285	32	1889-1921	53 82	51 80
17	Scott Valley	2,798	18	1871-1889	24 58	27.81
18	Fort Jones	2,570	33	1859-1892	25 24	23 70
19	Walla Walla Creek	2,570	34	1853-1892†	25 32	30 60
20	Happy Camp	1,132	6	1915-1921	41.64	45 77
21	Gilta	3,300	5	1910-1915	53.24	47 90
22	Orleans	520	18	1903-1921	50 00	46 80
23	Fort Gaston	397	25	1861-1891†	50 45	50 27
24	Monumental	3,420	5	1905-1910	109 08	108 70
25	Crescent City	50	30	1885-1921†	75 95	75.70
26	Christmas Prairie	3,000	2	1881-1886	78 92	77 35
27	Eureka	64	34	1887-1921	42.52	43.37
28	Fort Humboldt	50*	7	1859-1866	33 57	32.33
29	Rohnerville	75	19	1901-1920	42 86	43 85
30	Hydesville	400	1	1883-1884	34 06	45.40
31	Upper Mattole	244	33	1887-1921†	85 04	86.11
32	Shively	200	9	1912-1921	51.86	54 04
33	Dyerville	250	4	1907-1911	54 63	58 15
34	Blocksburg	1,700	11	1905-1916	67.37	63.10
35	Zenia	2,960	5	1901-1906	78 63	64 60
36	Ruth	2,925	9	1912-1921	49 15	51 20
37	Hayfork	2,300	6	1915-1921	29 21	32.11
38	Hyampom	1 200	1	1914-1915	51.53	44.79
39	China Flat	600	12	1909-1921	45 92	46 50
40	Big Bar	1,440	7	1914-1921	35 06	37.12
41	Weaverville	2,162	31	1871-1921†	37 81	39.20
42	Knob	2,860	2	1908-1910	57 90	50.58
43	Tehama	220	44	1872-1916	20 53	20.30
44	Los Molinos	215	2	1910-1912	16.74	19.57
45	Red Bluff	307	41	1877-1921	25.19	24 70
46	Rosewood	865	10	1894-1904	26 94	25 26
47	Anderson	432	4	Broken	33 61	37.79
48	Churn Creek	550	6	1915-1921	26 22	31 41
49	Shasta	1,049	17	1895-1912	53 80	51 20
50	Sims	565	4	1889-1893	70 88	61.90
51	Redding	552	46	1875-1921	38 52	37 70
52	Kennett	730	14	1907-1921	63 35	66 30
53	Delta	1,138	39	1882-1921	63 93	64.00
54	Montgomery Creek	2,500	11	1908-1919	54 08	54 60
55	Burney	3,300	8	1910-1918	26 41	27.28
56	Round Valley	5,500	12	1909-1921	77 62	88 08
57	Humbug Valley	4,300	4	1917-1921	40 54	54.55
58	Butt Valley	4,020	7	1903-1910	53.74	45 41
59	Canyon Dam	4,570	6	1915-1921	35 05	43.92
60	Nevis	4,304	2	1911-1913	23 98	35 26
61	Chester	4,550	11	1910-1921	29 06	33 25
62	Greenville	3,600	20	1894-1914	43 66	39 70
63	Susanville	4,195	28	1889-1918†	20 70	21 90
64	Standish	4,000	3	1917-1920	8 98	14.49
65	Long Valley	4,400	4	1909-1913	10 97	13.06

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
66	Beckwith	5,005	1	1908–1909	28 05	20 62
67	Portola	4,900	6	1915–1921	13 66	17 12
68	Sierraville	5,000	12	1909–1921	23 12	26 20
69	Hobart Mills	5,900	6	1909–1915	25 65	24 70
70	Boca	5,541	44	1870–1916†	21 05	21 10
71	Truckee	5,819	50	1870–1921	26 13	26 30
72	Summit	7,017	50	1871–1921	46 38	46 38
73	Tahoe	6,230	11	1910–1921	31 11	32 41
74	McKinney	6,225	5	1910–1915	37 06	35 80
75	Colfax	2,421	51	1870–1921	47 81	48.20
76	Iowa Hill	2,825	31	1879–1910	52 63	50 10
77	Strawberry Flat	2,845	23	1879–1902	51 08	50 55
78	Gold Run	3,222	20	1899–1919	51 09	49 30
79	Towle	3,704	50	1885–1920†	57 36	56 40
80	Alta	3,704	13	1871–1884	44 86	45 63
81	Blue Canon	4,695	22	1899–1921	66.17	64 60
82	Drum Forebay	4,563	5	1916–1921	49.31	57 75
83	Deer Creek	3,700	14	1907–1921	68 07	73 90
84	North Bloomfield	3,200	45	1870–1921†	53 98	54 60
85	Malakoff Mine	3,200	2	1886–1896†	59 94	60 53
86	Emigrant Gap	5,230	41	1870–1921†	52 91	54 50
87	Cisco	5,939	46	1870–1916	50 57	50 90
88	Fordyce Dam	6,500	27	1894–1921	68 43	67 80
89	Lake Spaulding	4,600	27	1894–1921	70 25	69 60
90	Downieville	3,150	13	1908–1921	63 55	67 80
91	Bowmans Dam	5,500	29	1871–1915†	74 38	73 00
92	La Porte	5,000	25	1894–1921†	76 62	77 50
93	Quincy	3,400	26	1895–1921	42 14	42 00
94	Edmanton	4,750	13	1893–1905	73 28	66 50
95	Mumford Hill	4,750	19	1876–1902†	71 64	68 37
96	Inskip	4,975	14	1907–1921	80 08	88 50
97	West Branch	3,216	14	1907–1921	72 35	80 00
98	Stirling City	3,525	14	1903–1917†	75 85	70 50
99	De Sabla	2,500	17	1904–1921	67 37	69.20
100	Magalia	2,321	13	1904–1917	85 24	81 50
101	Stanwood	2,140	15	1903–1920†	67 66	65 10
102	Las Plumas	560	6	1915–1921	40 78	51 15
103	Cherokee Reservoir	1,200	6	1873–1879	60 32	65 18
104	Cherokee	1,227	13	1871–1884	42 37	43 22
105	Centerville	490	6	1915–1921	38 22	47 91
106	Oroville	250	36	1885–1921	28 03	27 70
107	Palermo	213	23	1891–1914	23 98	22 00
108	Serriterre	629	1	1920–1921	39 96	38 04
109	Woodleaf	3,250	4	1905–1909	93 95	76.35
110	Camptonville	3,500	14	1907–1921	68 17	74 00
111	Head Dam	1,500	14	1907–1921	54 23	58 80
112	Dobbins	1,650	17	1904–1921	43 76	44 70
113	North San Juan	2,130	6	1896–1902	48 86	51 86
114	Colgate	700	12	1907–1921†	42 77	45 00
115	Cbute Camp	1,300*	14	1907–1921	54 27	58 76
116	Nevada City	2,580	57	1864–1921	53 89	52.21
117	Grass Valley	2,090	46	1873–1921†	53 00	52 80
118	Smartsville	600	9	1871–1880	33 12	32 41
119	Wheatland	81	29	1887–1916	22 21	21 30
120	Marysville	67	50	1871–1921	19 71	19 71
121	West Butte	100	4	1880–1914	14 17	17 89
122	Gridley	97	10	1907–1917	22 31	21 90
123	Biggs	98	17	1899–1916	22 20	20 00
124	Dodgeland	160	1	1920–1921	24 61	18 50
125	Durham	160	24	1895–1919	24 96	24 00
126	Chico	189	50	1871–1921	23 78	23 78
127	Corning	277	34	1880–1919†	20 59	19 90
128	Orland	354	38	1883–1921	18 02	17 50
129	Saint John	143	1	1920–1921	24 59	18 48

*Estimated

†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

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Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
130	Jacinto	110	8	1892–1900	19.57	18 69
131	Willows	136	42	1879–1921	16.65	16 60
132	Princeton	80	11	1873–1884	14 94	16 40
133	Colusa	60	40	1871–1921†	16.12	16.40
134	Williams	89	8	1876–1884	12 17	14 15
135	Fruto	624	22	1889–1911	21 67	19 50
136	Little Stony	.....	1	1885–1886	26 82	21.44
137	East Park	1,200	10	1911–1921	16 98	17 30
138	Fouts Springs	1,650	9	.....	36 16	35 72
139	Kono Tayee (Lakeport)	1,325	20	1874–1904†	23.16	24 40
140	Lakeport	1,325	21	1870–1921†	22 77	23 60
141	Upper Lake (Lake County)	1,350	28	1886–1914	28 25	26 80
142	Hullville	2,250	14	1907–1921	51 23	52 30
143	Covelo Ranger Station	1,550	16	1881–1918†	35.69	40.40
144	Camp Wright	.....	11	1864–1875	44 01	40 82
145	Hearst	1,800	5	1910–1915	51.93	52.35
146	Willits	1,364	29	1878–1907	55 91	54 90
147	Ukiah	620	44	1877–1921	36.82	36 40
148	Mendocino	50*	13	1871–1884	50 69	51 20
149	Fort Bragg	74	21	1861–1921†	38.66	41.67
150	Westport	50*	1	1885–1886	52.07	35.20
151	Branscombe	2,000	21	1900–1921	85 25	82 40
152	Laytonville	1,600	7	1904–1911	62 46	57 50
153	Point Arena	50*	9	1875–1884	30 49	30.32
154	Cloverdale	340	21	1893–1921†	41.73	39 60
155	Fort Ross	100	45	1875–1921†	53 87	53 20
156	Point Reyes	490	38	Broken	20 98	20.60
157	Farallones Light House	50*	1	1885–1886	26 15	20 24
158	South East Farallon	10	19	1894–1913	18 03	19 18
159	Peachland	190	25	1896–1921	41.11	41 40
160	Healdsburg	52	44	1877–1921	41.84	41 40
161	Highland Springs	.....	3	1883–1886	33 43	36 06
162	Twin Valley	2,200	6	1915–1921	42 28	47 32
163	Sulphur Banks	1,350	8	1911–1919	22.99	23.43
164	Middletown	1,300	11	1879–1896†	48 04	49.31
165	Helen Mine	2,750	21	1900–1921†	87 67	83 00
166	St. Helena Mt.	2,300	10	1901–1911	63 87	57.40
167	Calistoga	363	48	1873–1921	36 50	36.50
168	Santa Rosa	181	33	1888–1921	30 38	29 40
169	Petaluma	10	29	1874–1921†	23 93	24 20
170	South Vallejo	12	12	1872–1884	14.55	15.33
171	Benicia	55	30	Broken	14 87	14 41
172	Martinez	27	7	1877–1884	17 94	18 06
173	Fairfield (Suisun)	15	13	1871–1884	19 70	20 28
174	Okell	275	36	1884–1920	30 36	30 12
175	Imola	60	41	1877–1921†	23.66	23 40
176	Napa City	20	41	1877–1921†	23 66	23 40
177	Sonoma	30	17	1886–1907†	28 46	26.50
178	Oakville	153	7	1907–1914	33 29	34.19
179	St. Helena	255	13	1908–1921	35.42	37 00
180	Knoxville	.....	1	1883–1884	34 53	32.29
181	Rumsey	2,629	5	1888–1893	31.90	27 36
182	Guinda	350	20	1896–1916	21.92	21 00
183	Dunnigan	65	39	1877–1916	20.27	19.70
184	Nicolaus	33	1	1920–1921	19.53	17.75
185	Knights Landing	45	25	1878–1903	18 36	18 30
186	Woodland	63	48	1873–1921	17.49	17.50
187	Davis	51	49	1872–1921	17 04	17.10
188	Winters	132	1	1885–1886	25 40	19.85
189	Vacaville	175	37	1880–1917	27 01	26.37
190	Rio Vista	35	24	1893–1921†	17 87	17.30
191	Benson's Ferry	40*	3	1918–1921	14.19	15.47

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
192	Lodi	35	24	1888–1912	19 46	17 90
193	Bellota	150	10	1911–1921	17 64	20 07
194	Galt	49	42	1878–1921†	18 26	18 10
195	Brighton	42	7	1877–1884	16 95	14 79
196	Sacramento	71	72	1849–1921	18 72	18 60
197	Folsom	252	50	1871–1921	24 37	24 40
198	Represa	305	28	1893–1921	25 95	25 44
199	Rocklin	249	48	1871–1921†	22 01	22 40
200	Newcastle	970	14	1892–1910†	34 27	29.70
201	Auburn	1,360	50	1871–1921	33 72	33 70
202	Wire Bridge	565	8	1894–1902	35 09	34 22
203	Georgetown	2,650	46	1873–1921†	57 92	57 30
204	Pilot Creek	4,000	20	1894–1914	69 21	65 90
205	Mundy's	4,300	2			63 10
206	Placerville	1,875	43	1874–1921†	42 65	42 50
207	El Dorado	1,609	13	1889–1902	36 81	34 60
208	Shingle Springs	1 415	35	1888–1912†	33 72	34 10
209	Oleta	1,510	10	1892–1902	36 22	32 63
210	Drytown	790	12	1893–1906†	29 90	26 70
211	Ione	287	43	1878–1921	20 39	20 20
212	Jackson	1,900	10	1893–1903	35 16	32 38
213	Kennedy Mine	1,500	29	1892–1921	32.14	30 90
214	Mill Creek No. 1	2,450	14	1907–1921	44 42	48 00
215	Electra	725	17	1904–1921	32 44	32 70
216	Mokelumne Hill	1,550	36	1882–1918	31 93	31 00
217	San Andreas	445	44	1871–1915	42 87	42 10
218	Valley Springs	673	26	1888–1915†	24 37	22 50
219	Jenny Lind	300	14	1907–1921	18 13	19 65
220	Milton	381	33	1888–1921	21 56	20 70
221	Angels Camp	1,535	7	1908–1915	35 80	35 76
222	Melones	775	14	1907–1921	28 25	30 59
223	Phoenix Dam	2,500	7	1909–1916	29 91	30 09
224	Penstock Camp	3,750	3	1907–1910	37 31	39 82
225	Long Camp	4,100	1	1909–1910	43 72	44 61
226	American Camp	2,300	1	1915–1916	47 80	50 81
227	Calaveras River		4	1916–1920	40 23	49 70
228	Mitchell Hill	2,800	1	1915–1916	44 85	47 70
229	Westpoint	2,326	24	1894–1921†	41 85	40 20
230	Grizzly Flat	3,850			55 80	44 90
231	Bear River	5,800	7	1907–1914	48 86	52 42
232	Bear River Reservoir	5,680	11	1907–1918	54 38	58 79
233	Fallen Leaf	6,400	6	1909–1915	37 45	36 10
234	Tallac	6,230	4	1904–1914	26 31	25 43
235	Markleeville	5,525	1	1920–1921	15 02	13 53
236	Tamarack	8,030	18	1900–1921†	49 02	49 60
237	Shield's Ranch	5,300*	1	1920–1921	9 64	8.69
238	Bridgeport	6,500	5	1912–1917	10 82	10 51
239	Bodie	8,248	11	1895–1906	14 58	17 30
240	Lundy Reservoir	7,765	2	1919–1921	17 92	24 06
241	Laws	4,113	13	1883–1896	4 35	5 11
242	Bishop	4,450	31	1883–1918†	5 43	5 50
243	Bishop Creek	8,500	7	1911–1921†	14 09	15 30
244	Lake Sebrina	9,100	12	1909–1921	14 48	11 56
245	Hillside Reservoir	9,700	12	1909–1921	18 78	14 99
246	Owens Valley No. 2	4,070	1	1908–1909	7 27	5 01
247	Owens Valley No. 3	4,460	2	1908–1910	8 28	6 18
248	Owens Valley No. 4	5,040	2	1908–1910	9 37	6 99
249	Owens Valley No. 5	5,550	2	1908–1910	12 07	9 01
250	Owens Valley No. 6	6,190	2	1908–1910	17 17	12 82
251	Gem Lake	9,060	2	1919–1921	41 40	55 60
252	Huntington Lake	7,000	6	1915–1921	30 28	34 40
253	Cascada	4,900	6	1915–1921	29 48	31 09
254	Stevenson Creek	4,250	4	1915–1919	20 77	21 68
255	Toll House	2,000	3	1917–1921†	22 71	24.60

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
256	Fort Miller	409	4	Broken	24 51	20 56
257	Auberry	1,300	5	1916–1921	23.14	25.95
258	S. J. L. and P. Co. Res. No. 1	2,441	16	1903–1919	26 82	25 52
259	North Fork	3,000	12	1904–1921†	35 52	35.90
260	S. J. L. and P. Co. P. H. No. 3	2,825	2	1919–1921	34 84	37 48
261	San Joaquin L. and P. Co. (Crane Valley)	3,500	18	1903–1921	52 23	40 70
262	Buchanan	600	4	1878–1882	19.79	21 62
263	Summerdale	5,000	14	1896–1910	55 00	51 30
264	Mariposa	1,932	13	1908–1921	29.79	31.31
265	Glacier Point	7,297	1	1920–1921	29.83	27 11
266	Yosemite	3,945	15	1904–1921†	32 68	35.10
267	Hetch Hetchy	3,665	11	1910–1921	33 38	36 29
268	Lake Eleanor	4,700	11	1910–1921	39 57	43.00
269	Crockers	4,452	13	1896–1909	54 97	50.90
270	Second Garrotte	2,714	18	1883–1901	38 53	36.35
271	Groveland	1,400	8	1904–1914†	43.96	38 00
272	Jacksonville	650	10	1907–1917	33.90	36.05
273	Sonora	1,825	26	1888–1921†	33.96	32 50
274	Jamestown	1,471	10	1903–1913	32 67	31 48
275	Coulterville	1,660	4	1898–1902	19.81	18 96
276	La Grange	293	36	1868–1915†	16.46	16.80
277	Merced Falls	351	11	1907–1921†	15 87	16.20
278	Merced	173	49	1872–1921	11 02	11.10
279	Le Grand	255	21	1899–1921†	12 67	12 00
280	Central Point	.....	5	1879–1884	9 28	9.67
281	Los Banos	121	39	1873–1913†	7.95	8 20
282	Hills Ferry	65	4	1880–1884	11.70	11.41
283	Livingston	131	1	1920–1921	12 47	10 39
284	Denair	126	18	1899–1921†	10 39	9.80
285	Turlock	105	1	1920–1921	18.82	15 65
286	Longworth	132	5	1881–1886	15 03	14 91
287	Oakdale	156	34	1881–1921†	14 27	14 00
288	Farmington	111	38	1877–1915	16.49	15.90
289	Stockton	23	54	1867–1921	14 08	14 18
290	Lathrop	22	6	1915–1921	10 78	12 43
291	Grayson	54	14	1870–1884	12.26	12.93
292	Westley	90	26	1888–1915†	10 70	10.00
293	Modesto	90	44	1871–1915	10 66	10.70
294	Newman	91	32	1889–1921	10.83	10.20
295	Gilroy	193	47	1874–1921	19.90	19.80
296	Tennant	323	7	1877–1884	21 96	20 51
297	Morgan Hill	348	9	1899–1910†	22 95	22 04
298	Laurel	910	25	1891–1916	49.10	48.20
299	Wrights	1,600	2	1918–1920	50 66	57.60
300	Los Gatos	600	36	1885–1921	33 09	32 80
301	Campbell	217	24	1897–1921	15.39	16.10
302	Santa Clara	90	38	1881–1921†	16 19	15 90
303	San Jose	95	47	1874–1921	15 11	15.10
304	Lick Observatory	4,209	40	1881–1921	30 60	30 00
305	S. V. W. Co. No. 110 (Upper Arroyo Valley)	.....	8	1913–1921	20.99	21.69
306	S. V. W. Co. No. 109 (Upper Arroyo Valley)	.....	8	1913–1921	18 79	19.41
307	Spring Valley Water Co. No. 108	.....	8	1913–1921	11 96	12 36
308	Spring Valley Water Co. No. 105A	.....	3	1918–1921	13 36	15 01
309	Spring Valley Water Co. No. 106A	1,800	2	1919–1921	12 82	15 64
310	Spring Valley Water Co. No. 107	.....	8	1913–1921	22 87	23 61
311	Spring Valley Water Co. No. 112	.....	5	1913–1921†	19 25	21 40
312	S. V. W. Co. No. 111 (Patterson Ranch)	.....	7	1914–1921	17 45	18 91
313	Sam Parks	2,500	6	1912–1918	26 09	28 10
314	Ogiers	2,650	6	1912–1918	27 17	30.42
315	Blanch Gage	2,950	6	1912–1918	22.55	24.30
316	Calaveras	600	41	Broken	25 19	24 71
317	Mount Day	3,789	6	1912–1918	26 63	28 70
318	Tequisquita Ranch	244	7	1899–1906	16.21	15.60

†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
319	Niles	87	42	1871–1919†	19 05	18 70
320	Sunol	250	17	1898–1915	22 56	21 57
321	Pleasanton	361	7	1877–1884	18 94	19 07
322	Dublin	367	9	1909–1918	19 51	21 04
323	Weideman Ranch	1,500	2	1910–1918†	21 79	25 19
324	Bishop Ranch	425	4	1907–1911	22 26	21 71
325	Spring Valley Water Co. No. 101		9	1912–1921	15 82	17 23
326	Spring Valley Water Co. No. 102	700	9	1912–1921	15 35	16 73
327	Spring Valley Water Co. No. 103		8	1912–1921†	13 39	15 30
328	Alameda Sugar Co.	346	8	1903–1911	19 02	16 85
329	Hagerman Ranch	350	8	1906–1914	15 55	15 58
330	Duvall Vineyard	4,000	7	1904–1911	18 65	16 36
331	El Mocho Vineyard	550	9	1902–1911	15 82	14 21
332	Livermore	485	50	1871–1921	15 30	15 30
333	Spring Valley Water Co. No. 104		8	1912–1921†	11 94	12.94
334	Midway	354	2	1877–1879	6 60	5.35
335	Ellis	74	8	1871–1879	9 41	9.11
336	Tracy	64	40	1879–1921†	10 13	9.80
337	Byron	33	5	1879–1884	12 90	13 22
338	Brentwood	77	5	1879–1884	11 10	11.38
339	Antioch	46	42	1879–1921	12 52	12.40
340	Mount Diablo	3,848	2	1875–1877	21 01	24.16
341	Walnut Creek	75	20	1887–1921†	19 82	19.26
342	Crockett	100	3	1918–1921	15.64	17 43
343	San Pablo Lake	200*	5	1916–1921	17 44	21 80
344	East Brother Island	245	9	1875–1884	7.54	7 82
345	San Rafael	2,300	10	1871–1884	39 58	41 27
346	Kentfield	65	33	1888–1921	48 25	46 70
347	Mount Tamlapais	2,375	22	1898–1920	26 80	26 80
348	Sausalito	5	10	1904–1914	25 48	24 10
349	Point Bonita	283	9	1875–1884	25 46	25 82
350	Angel Island	762	17	1867–1884	21 82	20 61
351	Alcatraz Island	130	22	1861– †	17 99	16 78
352	Yerba Buena Island	343	9	1875–1884	17 78	16 31
353	Berkeley	320	34	1887–1921	25 72	25 60
354	Lake Temescal	425	13	1908–1921	21 65	22 91
355	Lake Chabot	235	44	1877–1921	22.48	22 18
356	San Leandro	48	14	1895–1911†	23.77	22 70
357	Alameda	10	2	1909–1911	13 40	12 52
358	Mills College	200	21	1893–1916†	26 41	24 80
358A	San Francisco	207	72	1849–1921	22.49	22 50
359	Oakland	36	47		23 84	23 80
359A	Fort Mason	100	13	1870–1884	16 24	15 50
360	Presidio	150	33	1849–1884†	19 79	18 90
361	Fort Point	186	4	1865–1869	22 88	17 84
362	Point Lobos	250	21	1893–1914	18 21	18 96
363	Lake Honda	400	1	1920–1921	25 52	26 05
364	Lake Merced	10	20	1870–1921†	22 64	22 75
365	Point Montara	25	9	1875–1884	22 73	23.54
366	San Andreas Reservoir	445	13	1871–1884	48.73	51 41
367	San Mateo	22	47	1874–1921	20 61	20 60
368	Lower Crystal Springs	300	28	Broken	30 29	29 29
369	Crystal Springs Cottage	300	24	1894–1918	30 09	29 42
370	Upper Crystal Springs	300	43	1875–1918	34 51	33 98
371	Pilarcitas	695	47	1871–1918	48 96	48 61
372	Woodside	428	2	1905–1907	37 77	28 60
373	Menlo Park	64	35	1878–1913	16 88	16 60
374	Portola Woods	370	14	1892–1906	31 12	28 52
375	Mountain View	95	18	1886–1910†	15 55	14 02
376	Pigeon Point	0	9	1875–1884	18 44	18 24
377	Ano Nueve Island	0	9	1875–1884	22 48	22 23
378	Boulder Creek	470	28	1888–1916	55 59	53 00
379	Ben Lomond	500	16	1899–1916†	55 55	54 40
380	Glenwood	885	9	Broken	44 18	45 18

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches	Inches.
381	Felton	275	26	1889–1921†	46 88	44 70
382	Santa Cruz	20	43	1878–1921	27 23	27 10
383	Aptos	102	30	1885–1915	28 12	26 80
384	Watsonville	23	31	1881–1921†	21 71	21 10
385	Pajaro	22	11	1873–1884	18 23	19 70
386	Hollister	284	47	1874–1921	13 19	13 10
387	Salinas	40	47	1873–1921†	14 05	14 00
388	Spreckels	43	16	1905–1921	13 98	13 20
389	Del Monte	25	10	1911–1921	14 90	15.56
390	Monterey	15	41	1847–1915†	16 25	16 30
391	Chualar	101	3	1881–1884	12 67	10 86
392	Big Sur	300	7	1914–1921	38 59	38 88
393	Gonzales	127	16	1899–1915	12 60	11.60
394	Soledad	188	45	1874–1921†	9 48	9 40
395	Abbotts	1,050	6	1915–1921	20 31	22 26
396	San Ardo	452	16	1886–1902	10 38	11 02
397	King City	333	32	1887–1921†	11 12	11 00
398	Priest Valley	2,240	19	1898–1921†	21 54	20 30
399	Coalinga	663	9	1912–1921	7 29	7 45
400	New Idria	2,500	3	1881–1884	19 43	16 65
401	Idria (New Idria)	2,500	1	1920–1921	13 86	16.31
402	Panoche	1,265	5	1914–1919	8 45	7 84
403	Mendota	177	13	1894–1908†	6 54	6 30
404	Firebaugh	153	27	Broken	8 00	7 98
405	Storey	296	21	1899–1921†	9 63	9 40
406	Borden	275	9	1875–1884	8 60	8 40
407	Friant	345	21	Broken	13 81	14 04
408	Hamptonville	....	2	1878–1880	16 48	18 83
409	Big Dry Creek	.....	8	1871–1879	16 28	18 84
410	Clovis	400	4	1917–1921	11 05	12 30
411	Fresno	293	40	1881–1921	9 78	9 60
412	Lemoore	226	6	1878–1884	7 91	7 54
413	Hanford	249	20	1899–1921†	8 49	8 50
414	Tulare	289	44	1876–1921†	8 39	8 40
415	Porterville	464	32	1889–1921	10 13	9 40
416	Lindsay	500*	6	1915–1921	10 33	9 56
417	Visalia	334	41	1877–1921†	9 89	9 60
418	Goshen	300*	7	Broken	6 91	6.42
419	Traver	.....	1	1886–1887	8 51	9.67
420	Kingsburg	.....	6	1878–1884	8 80	8 40
421	Selma	311	29	1886–1915	9 11	9 00
422	Dinuba	333	12	1909–1921	11 95	12 13
423	Reedley	347	20	1901–1921	11 65	11 50
424	Sanger	371	25	1889–1915†	10 66	10 30
425	Kings River	.....	6	1878–1884	16 35	15 60
426	Piedra	....	1	1920–1921	13.65	14 37
427	Dunlap	2,800	4	1912–1916	29.33	26.91
428	Lemon Cove	600	21	1899–1921†	14 66	14 00
429	Three Rivers	870	11	1910–1921	19 16	19 45
430	Lewis Valley	600	6	1878–1884	11 15	10 96
431	Milo	1,600	20	1898–1921†	22 85	21 30
432	Springville	4,000	14	1907–1921	35 14	34 30
433	Tule River	2,500	8	1913–1921	37 84	36 11
434	Owens Valley No. 16	6,100	2	1908–1910	10 58	7 89
435	Owens Valley No. 15	5,500	2	1908–1910	8 72	6 50
436	Owens Valley No. 14	5,000	2	1908–1910	6 45	4 81
437	Owens Valley No. 13	4,500	2	1908–1910	4 82	3 60
438	Owens Valley No. 12	4,100	2	1908–1910	3 92	2 93
439	Owens Valley No. 11	6,120	2	1908–1910	15 05	11 23
440	Owens Valley No. 10	5,590	2	1908–1910	10.50	7 84
441	Owens Valley No. 9	5,030	2	1908–1910	8 49	6.34
442	Owens Valley No. 8	4,800*	2	1908–1910	7 26	5.40

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level	Length of record.	Period of record.	Mean of seasonal precipitation record	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
443	Oweos Valley No. 7	3,940	2	1908–1910	5.75	4 29
444	Camp Independence	3,925	12	1871–1877	4 47	4 33
445	Lone Pine	3,728	16	1904–1920	5 70	4 30
446	Keeler	3,620	24	1885–1909	3 01	3 20
447	Greenland Ranch	178	9	1912–1921	1 71	1 68
448	Trona	1,623	1	1920–1921	4 99	4 34
449	Hot Springs	3,300	10	1907–1917	25 65	23 50
450	Weldon	2,700	4	1900–1906†	9 63	7 65
451	Kernville	2,600	27	1894–1921	10 30	10 00
452	Glennville	5,500	12	1909–1921	20 96	21 20
453	Isabella	2,500	13	1896–1909	10 62	10 30
454	Borel	2,500	10	1904–1915†	12 12	10 67
455	Edison Kern River	2,530	15	1904–1920†	11 48	10 50
456	Taylor's Ranch	2,640	2	1900–1902	9 46	8 76
457	Mojave	2,751	37	1877–1914	4 93	4 80
458	Tehachapi	3,964	37	1877–1914†	10 69	10 40
459	Tejon Ranch	1,500	19	1909–1921	10 52	9 78
460	Bear Valley	4,400	13	1900–1915†	20 02	16 00
461	Keene	2,721	7	1877–1884	13 79	13 27
462	Caliente	1,290	39	1876–1915	10 94	10 80
463	Edison	2,500	16	1904–1921†	11 21	9 40
464	Rio Bravo Ranch	550	4	1878–1882	7 53	8 84
465	Maguden Sub	500*	....		5 60	5 51
466	Sumner	400*	10	1874–1884	5 10	6 06
467	Oil Center	634	6	1914–1920	6 96	6 84
468	Thermal Heights	.....	6	1914–1920	10 06	9 88
469	Vestal	....	2	1910–1913†	6 22	8 29
470	Angiola	208	15	1899–1921†	6 51	6 20
471	Delano	319	32	1876–1908	6 38	6 60
472	Poso Ranch	....	19	1901–1920	6 25	5 44
473	Wasco	336	18	1899–1921†	6 43	5 40
474	Rosedale Ranch	373	7	1913–1920	6 42	5 42
475	Bakersfield	394	31	1889–1921†	5 58	5 20
476	Stockdale	360*	19	1901–1920	6 08	5 29
477	McClung Ranch	300*	3	1879–1882	5 04	6 86
478	Lakeside Ranch	320*	19	1901–1920	5 40	4 70
479	San Emidio	....	19	1901–1920	9 62	8 38
480	Maricopa	640	10	1911–1921	6 20	5 58
481	Middlewater	803	10	1911–1921	6 31	5.68
482	Dudley	595	9	1912–1921	6 80	5 96
483	Antelope Valley	1,205	9	1912–1921	9 36	9 56
484	Parkfield	2,800	11	1908–1921†	17 64	16 80
485	San Miguel	616	28	1887–1915	11 84	11 60
486	Jolon	960	37	1882–1921†	18 09	17 70
487	Paso Robles	800	34	1887–1921	16 35	16 30
488	Atascadero	837	5	1916–1921	17 49	18 21
489	Santa Margarita	996	27	1889–1916	28 32	27 40
490	San Luis Obispo	201	52	1869–1921	21 27	21 62
491	Santa Maria	220	30	1885–1921†	14 16	14 20
492	Betteravia	150	8	1913–1921	15 12	14 49
493	Lompoc	95	3	1918–1921	11 73	14 42
494	Point Conception	100*	8	1876–1884	11 78	11 99
495	San Miguel Island	500	23	1894–1921†	13 40	13 50
496	Los Alamos	569	12	1909–1921	17 29	15 31
497	Sisquoc Ranch	600	10	1904–1914	19 92	17 60
498	Wasioja	2,393	7	Broken	16 34	15 55
499	Pine Crest	1,000	17	1898–1916†	27 95	25 30
500	Santa Barbara	120	54	1867–1921	18 54	18 82
501	Ventura	50	35	1873–1909†	15.94	16.50

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

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Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
502	Hueneme	8	11	1873–1884	14 59	14 99
503	West Saticoy	150	19	1893–1916†	14.72	15.10
504	Santa Paula	286	18	Broken	15 87	16.50
505	Ojai Valley	900	16	1905–1921	23 87	20.60
506	Nordhoff	1,200	.....	.....	19.15	23.06
507	Mono Ranch	1,250*	13	1901–1914	34.24	29.28
508	Ozena	3,680	15	1904–1921†	17.10	15.80
509	Pattiway	3,750	6	1915–1921	10.59	9.90
510	Mutah Flat	4,850	9	1893–1902	13.99	20 05
511	Upper Lake	1,350	28	1886–1914	28 25	26.80
512	Frazier Mine	7,200	2	1895–1897	19.77	22.99
513	Fort Tejon	3,174	8	Broken	13 91	14.67
514	Smith's Ranch	3,500*	2	1899–1901	6 93	9.62
515	La Libre	3,170	1	1898–1899	5.35	10.48
516	Manzana	2,800	9	1894–1903	7.57	9.73
517	Monterio	4,500	13	1899–1912	17 87	18 00
518	Fairmont	3,047	8	Broken	13.36	14.66
519	Lancaster	3,000	1	1917–1918	6 25	7.53
520	Little Rock Creek	3,000	1	1920–1921	10.33	10.23
521	Ravenna	2,468	5	1879–1884	11 28	9.10
522	Aeton	486	1	1919–1920	9.78	9.88
523	Magic Hill	2,820	1	1899–1900	14 15	24 40
524	Pinchot	1,200*	3	1909–1912	16 98	15.20
525	Newhall	1,268	38	1877–1915	17.87	17.50
526	San Fernando	1,066	26	1877–1921†	14 16	13.91
527	Santa Monica	110	36	1885–1921	14 99	14.40
528	Los Angeles	361	44	1877–1921	15 50	15.20
529	Pasadena	827	22	1892–1921†	18.52	19.08
530	La Crescenta	2,069	3	1918–1921	21.49	24.70
531	Tujunga	1,400	1	1920–1921	23.39	23.15
532	May Canyon	1,650	2	1919–1921	20.31	20.31
533	Haines Canyon	2,400	3	1918–1921	28 82	33.12
534	Bryant's Ranch	1,800*	1	1920–1921	21.33	21.12
535	Lower Haines	2,000	3	1918–1921	24 87	28.60
536	Hansen Ranch	1,800*	2	1919–1921	29 27	29 27
537	Palmdale	3,299	6	1896–1902	6.90	9.79
538	Alder Creek	3,500	3	1918–1921	18 28	21 02
539	Eeho Mountain	4,016	3	1918–1921	23.09	26.53
540	Arroyo Seco	2,000	3	1918–1921	19 26	22.13
541	Sister Elsie Peak	5,081	3	1899–1919†	21.83	21.50
542	Colby Camp	3,875	3	1899–1902	20.88	20.72
543	Mt. Lowe Observatory	3,420	21	1896–1919†	27.50	28.90
544	Mount Wilson	5,850	17	1904–1921	33 30	31.80
545	Santa Anita Forest Station	1,500*	1	1920–1921	37.92	37.55
546	Sierra Madre	1,400	24	1897–1921	24.22	25.70
547	Monrovia Canon	900*	3	1918–1921	23.72	27.26
548	Burkhart Ranch	400*	14	1905–1919	18.10	17.45
549	Azusa	540	22	1898–1920	19.63	20.40
550	Glendora	740	11	1892–1911†	23.66	23.20
551	Alosta	750	4	1880–1884	27.90	23.03
552	Fish Canyon	1,000*	3	1918–1921	20.76	23.87
553	San Gabriel Power House	1,000*	4	1900–1921†	19 21	20.55
554	O'Melveny Camp	1,000*	1	1920–1921	27.22	26.96
555	Two Canyon Ranch	1,200*	1	1920–1921	22.95	24.69
556	San Gabriel Intake	1,200*	3	1918–1921	23 23	26.72
557	Follows Camp	1,800	3	1896–1899	22 55	35.42
558	Stanley Miller Mine	4,000*	2	1919–1921	30 60	30.60
559	Valyermo	3,700*	10	1911–1921	11 35	11.55
560	Llano	3,200*	3	1918–1921	6.46	7.43
561	Voltaire	3,000*	1	1920–1921	17.06	16.89
562	San Antonio Canyon	4,150	3	1918–1921	28.68	32 98
563	Mouth, San Antonio	2,300	3	1918–1921	21 60	24 81
564	Mountain Springs	2,750*	2	1919–1921	25 17	25 17
565	Claremont	1,200	30	1891–1921	18 10	19.30
566	Live Oak Canyon	1,350	3	1918–1921	17.38	19.96
567	Pomona	861	8	1913–1921	19 43	18 70
568	Soadra	711	10	1874–1884	12 51	11.65
569	Chino	714	22	1893–1915	15 71	16.30

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
570	Upland	1,750	20	1891–1911	21 00	23.10
571	Lordsburg	1,320	14	1904–1918	21 00	19 40
572	Rancho Del Jurupa	1,000	1	1882–1883	16 11	29 85
573	Fontana	1,325	6	1915–1921	17 90	17.90
574	Colton	978	8	1876–1884	9 77	9 97
575	San Bernardino	1,054	51	1870–1921	16 11	16 15
576	Redlands	1,352	32	1889–1921	14 64	14 70
577	Craftonville	1,759	17	1892–1909	14 10	14.90
578	Squirrel Inn	5,250	10	Broken	40 05	41 34
579	Mill Creek No. 2	2,950	18	1903–1921	24 36	23 00
580	Santa Ana River	2,850	17	1904–1921	29 73	27 48
581	Arrowhead Springs	2,000	7	1909–1919†	24 30	22 70
582	Morse's House	5,350	5	1895–1898	43 74	51 40
583	Deep Creek	5,200	5	1895–1898	24 61	28 90
584	Bear Valley Dam	6,500	22	1892–1918†	35 96	36 40
585	Devils Canon	2,000	3	1912–1915	25 68	22 72
586	Lytle Creek	2,250	16	1905–1921	38 40	36 00
587	Glen Ranch	3,256	16	1900–1916	35 40	32 90
588	Devore Ranch	3,256*	2	1919–1921	37 58	36 82
589	Dobie Ranch	3,300	11	Broken	5 89	4.91
590	Gray Mountain	3,000	2	1915–1917	4 65	4 64
591	Barstow	2,105	24	Broken	4 26	3.90
592	Daggett	2,006	1	1883–1884	3 98	2 15
593	Camp Cady		1	1868–1869	3 87	3 01
594	Holcomb	7,800	7	1909–1916	19 72	18 00
595	Holcomb Creek	5,220	3	1895–1898	13 63	17 80
596	Big Bear Tavern	6,809*	2	1919–1921	21 78	21 35
597	Seven Oaks	5,000	10	1911–1921	28 26	27.60
598	Converse Nursery	6,000	2	1915–1917	32 19	27.16
599	Raywood Flat	6,500	3	1918–1921	28 75	29 75
600	Rings Station	4,400	8	1874–1882	22 49	25 40
601	Red Dome	2,855	1	1920–1921	17 41	18 72
602	Mission Valley	2,350	3	1919–1921	11 37	10 88
603	Morongo Valley	2,500	3	1918–1921	8 71	8 33
604	Rose Mine	6,867	2	1919–1921	13 72	13 13
605	Bagdad	784	18	1903–1921	2 17	1 90
606	Fenner	2,091	1	1883–1884	7 47	4 04
607	Goffs	2,700	2	1916–1919*	8 39	9 76
608	Needles	477	29	1892–1921	4 28	4 40
609	Blythe	268	9	Broken	4 34	3 70
610	Sterling	255	43	1878–1921	2 32	2 30
611	Salton	265	18	1889–1907	2 66	2 90
612	Mecca	185	16	1905–1921	3 22	2 80
613	Indio	20	43	1878–1921	2 91	2 90
614	Andreas Canyon	1,000	1	1920–1921	4 07	3 54
615	Palm Springs	584	26	1889–1915	4 50	4 60
616	Whitewater Canyon	1,500*	1	1919–1920	6 84	5 90
617	Whitewater Ranch	1,200*	1	1920–1921	5 70	6 13
618	Millard Forks	3,500	1	1920–1921	23 44	25 21
619	Milllard Canyon	2,500	1	1920–1921	10 93	11 75
620	Cabezon	1,779	11	1898–1909	11 60	12 00
621	Whitewater	1,123	7	1877–1884	5 21	4 76
622	Snow Creek	1,300	1	1920–1921	9 57	10 29
623	Hurley Flat	3,500	2	1919–1921	21 49	20 56
624	Banning	2,330	8	1899–1921	14 63	16 40
625	Beaumont	2,558	16	1888–1921†	19 22	18 50
626	Beaumont (near)	3,045	10	1911–1921	23 34	22 80
627	San Gorgonio Pass	2,560	8	1875–1888†	22 67	26 70
628	San Jacinto	1,550	28	1893–1921	12 98	13 40
629	Idyllwild	5,250	10	1901–1911	27 80	26 10
630	Cahuilla	3,600	7	1911–1918	16 99	16 20
631	Aguanga	1,986	13	1908–1921	13 76	13 80
632	Oakgrove	2,751	7	Broken	17 01	17 36
633	Deadmans Hole	5,200	4	1911–1915	21 63	21 63
634	Chihuahua Mountain	4,200	4	1911–1915	22 08	21 60
635	Hot Springs Mountain	6,200	3	1912–1915	17 79	16 83
636	Eagles Nest	4,500	4	1911–1915	17 94	17 55
637	Warner's Springs	3,165	15	1906–1921	17 67	17 70

*Estimated.
†Records broken.

TABLE 4—(Continued). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record.	Period of record.	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
638	Puerta La Cruz	2,772	4	1911–1915	18 33	17.93
639	Warner Ranch House	2,894	4	1911–1915	18.95	18 54
640	Warner Summer Road	2,805	4	1911–1915	18.57	18.17
641	Warner Damsite	2,702	4	1911–1915	30 34	29 70
642	Monkey Hill	2,810	4	1911–1915	15 03	14.70
643	Damron's	2,725	4	1911–1915	32 74	32.04
644	Mesa Grande	3,350	13	1908–1921	30.39	30 40
645	Matagul	3,200	4	1911–1915	24 01	23.50
646	San Felipe	3,600	4	1911–1915	24 00	23.48
647	Divide	3,200	3	1912–1915	31.53	29.83
648	Volcan Mountain	4,800	4	1911–1915	36.36	35 58
649	Santa Ysabel Ranch	3,000	15	1900–1915	24 68	24 02
650	Santa Ysabel Stream	2,983	4	1911–1915	27.39	26.08
651	Witch Creek	2,800	6	1909–1915	27 19	26.98
652	Julian	4,500	22	1880–1921†	32 85	32 10
653	Schilling	4,550	3	1912–1915	27 91	26.40
654	Pine Hills Hotel	4,100	2	1913–1915	42 88	34 15
655	Rose Glen	2,300	4	1911–1915	23 26	22.75
656	Ramona	1,440	19	1896–1915	17.25	17.75
657	Santa Maria Damsite	1,400	1	1914–1915	28 42	19.21
658	Rockwood Ranch	430	22	1893–1915	13 04	13 61
659	Pamo Camp	975	1	1914–1915	28 18	19 03
660	Pamo	1,050	2	1911–1913	16.21	20.52
661	Sutherland Dam	1,900	1	1914–1915	37.37	25.23
662	Pine Mountain	2,500	1	1911–1912	19 81	21 53
663	Head of Escondido Ditch	1,986	15	1896–1915†	30.92	21.98
664	Amago	2,800	7	Broken	23 03	27.90
665	Rincon or Warner's	2,975	3	1912–1915	29.20	27.61
666	Mendenhall	4,500	4	1911–1915	33 46	32.72
667	Nellie	5,350	13	1901–1920†	48 38	45.40
668	Valley Center	1,360	42	1872–1912†	19.74	19.40
669	Escondido	650	24	1897–1921	16 00	16.60
670	Twin Oaks	1,000	11	1875–1886	15.47	14.88
671	Oceanside	60	10	1909–1919	12 87	12.80
672	Fallbrook	700	27	1876–1903	17 27	17.20
673	Elsinore	1,234	22	1887–1921†	13.16	13.50
674	Riverside	851	40	1881–1921	10 89	10.70
675	Corona	615	12	1908–1921†	13 06	13.00
676	Tustin (near)	200	44	1877–1921	13 13	13.00
677	Santa Ana	133	11	1889–1921†	12 98	12.60
678	Orange	176	3	1883–1886	15.78	11.34
679	Yorba Linda	405	8	1913–1921	14 81	13.51
680	Anaheim	134	29	1878–1909†	11.80	12.00
681	Drumm Barracks	32	7	1863–1870	9 88	10 62
682	San Pedro	19	8	1888–1921†	9.73	10 80
683	Venice	50	1	1917–1918	13.62	11.63
684	Avalon	30	9	Broken	12.74	12.67
685	Santa Fe Ranch	55	4	1911–1915	10 61	9.64
686	Poway	460	24	1879–1909†	13.96	13.90
687	Miramar	660	14	1901–1915	14.15	13.71
688	La Mesa Dam	500	3	1912–1915	14.25	13.48
689	Chollas Heights	350	2	1914–1915	19 30	13.04
690	San Diego	87	71	1850–1921	9 66	9.94
691	Point Loma	302	17	1904–1921	11 20	10 70
692	Otay	90	7	1908–1915	11.07	10.83
693	Bonita	60	22	1899–1921	10 60	10.60
694	Sweetwater Dam	310	27	1888–1915	10 88	10.78
695	La Presa	300	1	1914–1915	17 13	11 57
696	End of Flume	640	16	1899–1915	13.69	13.58
697	El Cajon	482	22	1899–1921	13.75	13.70
698	El Cajon Valley	670	7	1908–1915	11 72	11.46
699	Lakeside	400	2	1909–1911	12 06	12.30
700	Los Coches Creek	710	15	1900–1915	13 63	13.32
701	Los Padres Ranch	490	13	1901–1915†	15.87	15.26
702	Dehesa	600	6	1902–1908	16.03	14.79
703	Jamul Ranch	800	2	1912–1915†	16 77	15.67

†Records broken.

TABLE 4—(Concluded). PRECIPITATION DATA USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in order of numbers on map, Plate IV.

For alphabetical list see Table 5.

Station on map.	Precipitation station.	Elevation above sea level.	Length of record	Period of record	Mean of seasonal precipitation record.	Fifty year mean seasonal precipitation.
Number.		Feet.	Years.		Inches.	Inches.
704	Lower Otay Reservoir	486	9	1906–1915	11 80	11 60
705	Dulzura	1,075	1	1914–1915	24 03	16 24
706	Tecate	1,775	1	1914–1915	23 75	16 05
707	Potrero	2,390	1	1914–1915	27 34	18 47
708	Campo	2 543	31	1877–1921†	20 50	20 30
709	Morena Dam	3,000	8	1907–1915	21 79	21 79
710	Skye Valley	2,550	1	1913–1914	19 45	18 88
711	Barrett Dam	1,600	4	1917–1921	17 34	20 59
712	Lyon Peak	3,755	1	1914–1915	55 63	37 60
713	Lyon Valley	2,200	1	1914–1915	35 59	24 03
714	Lawson Valley	2,100	1	1914–1915	30 02	20 29
715	Jatapul	2,725	1	1914–1915	28 88	19 50
716	Chocolate Creek	760	16	1899–1915	17 07	16 95
717	Diverting Dam	820	16	1899–1915	16 99	16 86
718	Cuyamaca	4,667	33	1888–1921	38 95	38 80
719	East Cuyamaca	4,600	3	1912–1915	21 93	20 75
720	Descanso	3,400	12	1896–1915†	22 72	25 40
721	Laguna	5,440	10	1894–1904	18 59	22 32
722	Brawley	105	9	1912–1921	2 38	2 11
723	Imperial	65	4	1902–1906	4 58	4 36
724	Heber	65	9	1905–1914	2 16	1 88
725	Calexico	0	16	1905–1921	2 94	2 50
726	Fort Yuma	100	12	1871–1883	3 25	3 12

†Records broken.

TABLE 5. PRECIPITATION STATIONS USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in alphabetical order.

For list in order of numbers on Plate IV see Table 4.

Precipitation station on map.	Number.	Precipitation station on map.	Number.	Precipitation station on map.	Number.
Abbotts	395	Burkhart Ranch	548	Divide	647
Acton	522	Burney	55	Dobbins (near)	112
Aguanga	631	Butt Valley	58	Dobie Ranch	589
Alameda	357	Byron	337	Dodgeland	124
Alameda Sugar Co.	328	Cabezon	620	Downieville	90
Alcatraz Island	351	Calaveras	316	Drum Forebay	82
Alder Creek	538	Calaveras River	227	Drumm Barracks	681
Alosta	551	Cahuilla	630	Drytown	210
Alta	80	Calexico	725	Dublin	322
Alturas	3	Caliente	462	Dudley	482
Amago	664	Calistoga	167	Dulzura	705
American Camp	226	Campbell	301	Dunlap	427
Anaheim	680	Camp Cady	593	Dunnigan	183
Anderson	47	Camp Independence	444	Dunsmuir	16
Andreas Canyon	614	Campo	708	Durham	125
Angels Camp	221	Camptonville	110	Duvall Vineyard	330
Angel Island	350	Camp Wright	144	Dyerville	33
Angiola	470	Canyon Dam	59	Eagles Nest	636
Ano Nuevo Island	377	Cascada	253	East Brother Island	344
Antelope Valley	483	Cedarville	2	East Cuyamaca	719
Antioch	339	Centerville	105	East Park	137
Aptos	383	Central Point	280	Echo Mountain	539
Arrowhead Springs	581	Cherokee	104	Edgewood	12
Arroyo Seco	540	Cherokee Reservoir	103	Edison	463
Atascadero	488	Chester	61	Edison Kern River	455
Auberry	257	Chico	125	Edmanton	94
Auburn	201	Chihuahua Mountain	634	El Cajon	697
Avalon	684	China Flat	39	El Cajon Valley	698
Azusa	549	Chino	569	El Dorado	207
Bagdad	605	Chocolate Creek	716	Electra	215
Bakersfield	475	Chollas Heights	689	Ellis	335
Banning	624	Christmas Prairie	26	El Mocho Vineyard	331
Barrett Dam	711	Chualar	391	Elsinore	673
Barstow	591	Churn Creek	48	Emigrant Gap	86
Bear River	231	Chute Camp	115	End of Flume	696
Bear River Reservoir	232	Cisco	87	Escondido	669
Bear Valley	460	Claremont	565	Eureka	27
Bear Valley Dam	584	Clear Lake (Modoc County)	5	Fairfield	173
Beaumont	625	Cloverdale	154	Fairmont	518
Beaumont (near)	626	Clovis	410	Fallen Leaf	233
Beckwith	66	Coalinga	399	Fallbrook	672
Bellota	193	Colby Camp	542	Farallones Light House	157
Benicia	171	Colfax	75	Farmington	288
Ben Lomond	379	Colgate	114	Felton	381
Bensons Ferry	191	Colton	574	Fenner	606
Berryvale (Sisson)	14	Colusa	133	Firebaugh	404
Berkeley	353	Converse Nursery	598	Fish Canyon	552
Betteravia	492	Corning	127	Follows Camp	557
Big Bar	40	Corona	675	Folsom	197
Big Bear Tavern	596	Covelo Ranger Station	143	Fontana	573
Big Dry Creek	409	Coulterville	275	Fordyce Dam	88
Biggs	123	Craftonville	577	Fort Bidwell	1
Big Sur	392	Crescent City	25	Fort Bragg	149
Bishop	242	Crockett	342	Fort Crook	7
Bishop Creek	243	Crockers	269	Fort Gaston	23
Bishop Ranch	324	Crystal Springs Cottage	369	Fort Humboldt	28
Blanch Gage	315	Cuyamaca	718	Fort Jones	18
Blocksburg	34	Daggett	592	Fort Mason	359A
Blue Canyon	81	Damron's	643	Fort Miller	256
Blythe	609	Davis	187	Fort Point	361
Boca	70	Deadmans Hole	633	Fort Ross	155
Bodie	239	Deep Creek	583	Fort Tejon	513
Bonita	693	Deer Creek	83	Fort Yuma	726
Borden	406	Delano	471	Fouts Springs	138
Borel	454	Del Monte	389	Frazier Mine	512
Boulder Creek	378	Delta	53	Fresno	411
Bowmans Dam	91	De Sabla	99	Friant	407
Branscombe	151	Dehesa	702	Fruto	135
Brawley	722	Denair	284	Galt	194
Brentwood	338	Descanso	720	Gem Lake	251
Bridgeport	238	Devils Canyon	585	Georgetown	203
Brighton	195	Devore Ranch	588	Gilroy	295
Bryant's Ranch	534	Dinuba	422	Gilta	21
Buchanan	262	Diverting Dam	717	Glacier Point	265

TABLE 5—(Continued). PRECIPITATION STATIONS USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in alphabetical order

For list in order of numbers on Plate IV see Table 4.

Precipitation station on map.	Number.	Precipitation station on map.	Number.	Precipitation station on map.	Number.
Glendora	550	Kings River	425	Matagul	645
Glen Ranch	587	Knights Landing	185	May Canyon	532
Glennville	452	Knob	42	McCloud	15
Glenwood	380	Knoxville	180	McClung Ranch	477
Goffs	607	Kono Tayee (Lakeport)	139	McKinney	74
Gold Run	78	La Crescenta	530	Mecca	612
Gonzales	393	La Grange	276	Melones	222
Goshen	418	Laguna	721	Mendenhall	666
Grass Valley	117	Lake Chabot	355	Mendocino	148
Gray Mountain	590	Lake Eleanor	268	Menlota	403
Grayson	291	Lake Honda	363	Menlo Park	373
Greenland Ranch	447	Lake Merced	364	Merced	278
Greenville	62	Lakeport	140	Merced Falls	277
Gridley	122	Lakeside	699	Mesa Grande	644
Groveland	271	Lakeside Ranch	478	Middletown	164
Grizzly Flat	230	Lake Sobrina	244	Middlewater	481
Guinda	182	Lake Spaulding	89	Midway	334
Hagerman Ranch	329	Lake Temescal	354	Millard Canyon	619
Haines Canyon	533	La Libre	515	Millard Forks	618
Hamptonville	408	La Mesa Dam	688	Mill Creek No. 1	214
Hanford	413	Lancaster	519	Mill Creek No. 2	579
Hansen Ranch	536	La Porte	92	Mills College	358
Happy Camp	20	La Presa	695	Milo	431
Hayfork	37	Las Plumas	102	Milton	220
Head Dam	111	Lathrop	290	Miramar	687
Head of Escondido Ditch	663	Laurel	298	Mission Valley	602
Healdsburg	160	Laws	241	Mitchell Mill	228
Hearst	1*5	Lawson Valley	714	Modesto	293
Heber	724	Laytonville	152	Mojave	457
Helen Mine	165	Le Grand	279	Mokelumne Hill	216
Hetch Hetchy	267	Lemon Cove	428	Monkey Hill	642
Highland Springs	161	Lemoore	412	Mono Ranch	507
Hills Ferry	282	Lewis Valley	430	Monrovia Canyon	547
Hillside Reservoir	245	Lick Observatory	304	Montaeme	10
Hobart Mills	69	Lindsay	416	Monterey	390
Holcomb	594	Little Rock Creek	520	Monterio	517
Holcomb Creek	595	Little Stony	136	Montgomery Creek	54
Hollister	386	Live Oak Canyon	566	Monumental	24
Hornbrook	9	Livermore	332	Morongo Valley	603
Hot Springs	449	Livingston	283	Morena Dam	709
Hot Springs Mountain	635	Llano	560	Morgan Hill	297
Hueneme	502	Lodi	192	Morse's House	582
Hullville	142	Lompoc	493	Mountain Springs	564
Humbug Valley	57	Lone Pine	445	Mountain View	375
Hurley Flat	623	Long Camp	229	Mount Day	317
Huntington Lake	252	Long Valley	65	Mount Diablo	340
Hyampom	38	Longwood	286	Mt. Lowe Observatory	543
Hydesville	30	Lordsburg	571	Mount Tamalpais	347
Idria (new Idria)	401	Los Alamos	496	Mount Wilson	544
Idyllwild	629	Los Angeles	528	Mouth, San Antonio	563
Imola	175	Los Banos	281	Mumford Hill	95
Imperial	723	Los Coches Creek	700	Mutah Flat	510
Indio	613	Los Gatos	300	Mundy's	205
Inskip	96	Los Molinos	41	Napa City	176
Ione	211	Los Padres Ranch	701	Needles	608
Iowa Hill	76	Lower Crystal Springs	368	Nellie	667
Isabella	453	Lower Haines	535	Nevada City	116
Jacinto	130	Lower Otay Reservoir	704	Nevis	60
Jackson	212	Lundy Reservoir	240	Newcastle	200
Jacksonville	272	Lyon Peak	712	Newhall	525
Jamestown	274	Lyon Valley	713	New Idria	400
Jamul Ranch	703	Lytle Creek	586	Newman	294
Japatul	715	Macdoel	8	Nicolaus	184
Jenny Lind	219	Madeline	4	Niles	319
Jolon	486	Magalia	100	Nordhoff	506
Julian	652	Magic Hill	523	North Bloomfield	84
Keeler	446	Magunden Sub	465	North Fork	259
Keene	461	Malakoff Mine	85	North San Juan	113
Kennedy Mine	213	Manzana	516	Oakdale	287
Kennett	52	Maricopa	480	Oakgrove	632
Kentfield	346	Mariposa	264	Oakland	359
Kernville	451	Markleeville	235	Oakville	178
King City	397	Martinez	172	Oceanside	671
Kingsburg	420	Marysville	120	Ogiers	314

TABLE 5—(Continued). PRECIPITATION STATIONS USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in alphabetical order.

For list in order of numbers on Plate IV see Table 4.

Precipitation station on map.	Number.	Precipitation station on map.	Number.	Precipitation station on map.	Number.
Oil Center	467	Priest Valley	398	Santa Ana River	580
Ojai Valley	505	Princeton	132	Santa Anita Forest Station	545
Okell	174	Puerta La Cruz	638	Santa Barbara	500
Oleta	209	Quincy	93	Santa Clara	302
O'Melveny Camp	554	Ramona	656	Santa Cruz	382
Orange	678	Rancho Del Jurupa	572	Santa Fe Ranch	685
Orland	128	Ravenna	521	Santa Margarita	489
Orleans	22	Raywood Flat	599	Santa Maria	491
Oroville	106	Red Bluff	45	Santa Maria Damsite	657
Otay	692	Redding	51	Santa Monica	527
Owens Valley No. 2	246	Red Dome	601	Santa Paula	504
Owens Valley No. 3	247	Redlands	576	Santa Rosa	168
Owens Valley No. 4	248	Reedley	423	Santa Ysabel Ranch	649
Owens Valley No. 5	249	Represa	198	Santa Ysabel Stream	650
Owens Valley No. 6	250	Rincon or Warner's	665	Sausalito	348
Owens Valley No. 7	443	Rings Station	600	Schilling	653
Owens Valley No. 8	442	Rio Bravo Ranch	464	Scott Valley	17
Owens Valley No. 9	441	Rio Vista	190	Second Garrotte	270
Owens Valley No. 10	440	Riverside	674	Selma	421
Owens Valley No. 11	439	Rocklin	199	Serriterre	108
Owens Valley No. 12	438	Rockwood Ranch	658	Seven Oaks	597
Owens Valley No. 13	437	Rohnerville	29	Shasta	49
Owens Valley No. 14	436	Rosedale Ranch	474	Shield's Ranch	237
Owens Valley No. 15	435	Rose Glen	655	Shingle Springs	208
Owens Valley No. 16	434	Rosewood	46	Shively	32
Ozena	508	Rose Mine	604	Sierra Madre	546
Pajaro	385	Round Valley	56	Sierraville	68
Palermo	107	Rumsey	181	Sims	50
Palmdale	537	Ruth	36	Sisquoc Ranch	497
Palm Springs	615	Sacramento	196	Sisson	13
Pamo	660	St. Helena	179	Sister Elsie Peak	541
Pamo Camp	659	St. Helena Mountain	166	Skye Valley	710
Panoche	402	Saint John	129	Smartsville	118
Parkfield	484	Salinas	387	Smith's Ranch	514
Pasadena	529	Salton	611	Snow Creek	622
Paso Robles	487	Sam Parks	313	Soledad	394
Pattiway	509	San Andreas	217	Sonoma	177
Peachland	159	San Andreas Reservoir	366	Sonora	273
Penstock Camp	224	San Ardo	396	South East Farallon	158
Petaluma	169	San Antonio Canyon	562	South Vallejo	170
Phoenix Dam	223	San Bernardino	575	Spadra	568
Piedra	426	San Diego	690	Spreckels	388
Pigeon Point	376	San Emidio	479	Spring Valley Water Co. No. 101	325
Pilarcitas	371	San Felipe	646	Spring Valley Water Co. No. 102	326
Pilot Creek	204	San Fernando	526	Spring Valley Water Co. No. 103	327
Pinchot	524	San Francisco	358A	Spring Valley Water Co. No. 104	333
Pine Crest	499	San Gabriel Intake	556	Spring Valley Water Co. No. 105A	308
Pioe Hills Hotel	654	San Gabriel Power House	553	Spring Valley Water Co. No. 106A	309
Pine Mountain	662	Sanger	424	Spring Valley Water Co. No. 107	310
Pittville	6	San Gorgonio Pass	627	Spring Valley Water Co. No. 108	307
Placerville	206	San Jacinto	628	Spring Valley Water Co. No. 109 (Upper Arroyo Valley)	306
Pleasanton	321	San Joaquin Light and Power Co. (Crane Valley)	261	Spring Valley Water Co. No. 110 (Upper Arroyo Valley)	305
Point Arena	153	San Joaquin Light and Power Co. (Power House No. 3)	260	Spring Valley Water Co. No. 111 (Patterson Ranch)	312
Point Bonita	349	San Joaquin Light and Power Co. (Res. No. 1)	258	Spring Valley Water Co. No. 112	311
Point Conception	494	San Jose	303	Springville	432
Point Lobos	362	San Leandro	356	Squirrel Inn	578
Point Loma	691	San Luis Obispo	490	Standish	64
Point Montara	365	San Mateo	367	Stanley Miller Mine	558
Point Reyes	156	San Miguel	485	Stanwood	101
Pomona	567	San Miguel Island	495	Sterling	610
Porterville	415	San Pablo Lake	343	Stevenson Creek	254
Portola	67	San Pedro	682	Stirling City	98
Portola Woods	374	San Rafael	345	Stockdale	476
Poso Ranch	472	Santa Ana	677	Stocktoo	289
Potrero	707				
Poway	686				
Presidio	360				

TABLE 5—(Concluded). PRECIPITATION STATIONS USED IN CONSTRUCTING ISOHYETOSE MAP.

Stations listed in alphabetical order.

For list in order of numbers on Plate IV see Table 4.

Precipitation station on map.	Number.	Precipitation station on map.	Number.	Precipitation station on map.	Number.
Storey	405	Tulare	414	Wasioja	498
Strawberry Flat	77	Tule River	433	Watsonville	384
Suisun	173	Turlock	285	Weaverville	41
Sulphur Banks	163	Tustin (near)	676	Weideman Ranch	323
Summerdale	263	Twin Oaks	670	Weldon	450
Summit	72	Twin Valley	162	West Branch	97
Sumner	466	Two Canyon Ranch	555	West Butte	121
Sunol	320	Ukiah	147	Westley	292
Susanville	63	Upland	570	Westpoint	229
Sutherland Dam	661	Upper Crystal Springs	370	Westport	150
Sweetwater Dam	694	Upper Lake	511	West Saticoy	503
Tahoe	73	Upper Lake (Lake County)	141	Wheatland	119
Tallac	234	Upper Mattole	31	Whitewater	621
Tamarack	236	Vacaville	189	Whitewater Canyon	616
Taylor's Ranch	456	Valley Center	668	Whitewater Ranch	617
Tecate	706	Valley Springs	218	Williams	134
Tehachapi	458	Valyermo	559	Willits	146
Tehama	43	Venice	683	Willows	131
Tejon Ranch	459	Ventura	501	Winters	188
Tennant	296	Vestal	469	Wire Bridge	202
Tequisquita Ranch	318	Visalia	417	Witch Creek	651
Thermal Heights	468	Volcan Mountain	648	Woodland	186
Three Rivers	429	Voltaire	561	Woodleaf	109
Toll House	255	Walla Walla Creek	19	Woodside	372
Towle	79	Walnut Creek	341	Wrights	299
Tracy	336	Warner Damsite	641	Yerba Buena Island	352
Traver	419	Warner Ranch House	639	Yorba Linda	679
Trona	448	Warner's Springs	637	Yosemite	266
Truckee	71	Warner Summer Road	640	Yreka	11
Tujunga	531	Waseo	473	Zenia	35

TABLE 6. ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Section and key letter.	System or locality.	Data. G	N	M	Page index. Measured.	Proposed.
	A					
7-S	"A" Canal			x	147	
11-A	Alameda County Water District		x	x	157	
13-Q	Alicia Mutual Water Company	x			160–162	
7-L	Aliso Canal	x		x	144	
7-W	Alpaugh Irrigation District	x	x	x	151	
7-W *p*	Alpaugh Irrigation District	x	x	x		176
7-Q	Alta Irrigation District	x		x	146	
1-N	Alta Loma Mutual Water Company		x		125	
1-A	Alta Mutual Water Company				117	
16-J	Alturas: Pit River Valleys near—		x		169	
14-R	American Canyon Water Company		x		167	
7-I	American Seedless Raisin Company		x	x	144	
7-I *p*	American Seedless Raisin Company		x			174
1-S	Anaheim Water Company	x	x	x	128	
7-Y	Anderson Canal	x	x	x	152	
13-A *p*	Anderson-Cottonwood Irrigation District	x	x	x		177
4-C	Appleton Land, Water & Power Company		x		137	
7-W	Area irrigated from Deer Creek	x			151	
7-W	Area irrigated from White River	x			151	
1-H	Arroyo Ditch and Water Company		x	x	122	
9-A *p*	Atascadero Colony		x			176
1-B	Atmore Ditch	x	x		118	
2	Average of 18 mutual water companies		x		131	
2	Average of 56 mutual water companies		x		131	
1-K	Azusa Irrigation Company		x	x	123	
	B					
16-D	Babcock, Soule and Martin Canal	x		x	168	
1-J	Baldwin Park Water Company		x		122	
1-D	Ballona Irrigation Association		x	x	120	
2-B	Banning Heights Mutual Water Company		x	x	129	
2-B	Banning Water Company		x	x	129	
7-C *p*	Banta-Carbona Irrigation District	x	x	x		173
1-H	Banta Ditch Association		x		122	
1-P	Bear Valley Mutual Water Company	x	x	x	126	
14-O	Bear River Water Company	x	x		166	
1-K	Beardslee Water Ditch Company		x	x	123	
7-Y	Beardsley Canal	x	x	x	153	
2-B	Beaumont Irrigation District	x	x	x	129	
1-E	Bell Water Company		x		120	
7-S	Beta Main Canal			x	147	
5-D	Big Pine Canal: Owens River and—	x			138	
16-G *p*	Big Valley, Lassen County		x	x		182
5-C	Bishop Creek Association	x			138	
5-C	Bishop Creek Canal	x		x	138	
5-C *p*	Bishop Creek Canal	x	x	x		172
7-M	Blythe Canal	x			145	
8-C	Boston Land Company		x		157	
1-H	Boulevard Water Company			x	122	
7-L	Brown Slough			x	144	
14-J	Browns Valley Canal		x		166	
14-J *p*	Browns Valley Irrigation District		x	x		180
7-Z	Buena Vista Canal	x	x	x	156	
7-U	Burton Ditch	x			151	
7-C	Byron-Bethany Irrigation District			x	140	
7-C *p*	Byron-Bethany Irrigation District	x	x			173
	C					
2-B	Cabezon Water Company		x	x	129	
1-G	California Domestic Water Company	x	x		121	
1-F	California-Michigan Land & Water Co.		x		121	
7-J *p*	California Packing Corporation		x			175
7-X	Calloway Canal	x	x	x	152	
1-B	Camulos Ditch	x	x	x	118	
1-M	Canyon Water Company		x	x	124	
1-U	Capistrano Water Company		x	x	129	

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TABLE 6—(Continued). APLPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

NOTE—"X" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use. (p) Indicates data on proposed use. Lines not marked (p) refer to data on measured use.

TABLE 6—(Continued.) ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

NOTE—"x" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use. (*p*) Indicates data on proposed use. Lines not marked (*p*) refer to data on measured use.

TABLE 6—(Continued.) ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

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TABLE 6.

TABLE 6—(Continued). ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Section and key letter.	System or locality.	Data. G	N	M	Page index. Measured.	Proposed
	L					
7-S	Laguna Irrigation District	x			148	
2-C	Lake Hemet Water Company		x	x	130	
7-S	Lake Lands Canal	x		x	148	
7-T	Lakeside Ditch	x		x	150	
2-E	La Mesa, Lemon Grove and Spring Valley Irrigation District	x			131	
16-C *p*	Lands in Shasta Valley	x		x	.....	182
1-J	Lands near Covina	x			123	
14-H *p*	Lands under Grizzly Creek, Butte and Yuba counties	x	x	x	.....	180
13-E *p*	Lands under Iron Canyon Reservoir Project	x	x	x	.....	177
1-D	La Rica Water Company		x	x	120	
16-P	Lassen Irrigation Company		x		169	
16-H *p*	Lassen: Modoc and—County Valleys Tributary to the Pit River		x	x	.....	182
7-S	Last Chance Water Ditch Company	x		x	148	
1-L	La Verne Irrigation Company		x	x	123	
1-L	La Verne Land and Water Company		x	x	123	
6-D	Lemon Cove Ditch	x		x	139	
2-E	Lemon Grove: LaMesa,—and Spring Valley Irrigation District	x			131	
7-S	Lemoore Canal and Irrigation Company	x		x	148	
7-X	Lerdo Canal	x	x	x	152	
7-R	Les Emigrants: Island No. 3 Consolidated and—	x			147	
7-S	Liberty Canal	x		x	148	
13-V *p*	Lincoln: Sacramento-—Area	x			.....	178
2-D *p*	Linda Vista Mesa		x		.....	171
2-D *p*	Linda Vista Area: San Luis Rey to		x	x	.....	171
6-F *p*	Lindsay-Strathmore and Terra Bella Irrigation Districts	x	x		.....	173
6-E	Lindsay-Strathmore Irrigation District	x	x	x	139	
6-E *p*	Lindsay-Strathmore Irrigation District	x	x	x	.....	173
6-E	Lindsay Water Development Company		x		139	
1-I	Little Lake Ditch			x	122	
4-B	Little Rock Irrigation District		x	x	137	
16-D	Little Shasta River	x			168	
16-D	Little Shasta Valley Springs		x		168	
7-P	Lone Tree Canal			x	145	
7-B *p*	Lone Tree Irrigation District		x		.....	173
16-R *p*	Long Valley Creek Irrigation District	x	x		.....	183
13-C	Los Molinos Area		x	x	158	
13-C	Los Molinos Land Company (Coneland Water Co.)	x	x	x	158	
13-C *p*	Los Molinos Land Company (Coneland Water Co.)	x	x	x	.....	177
1-H	Los Nietos Irrigation Company		x	x	121	
14-K	Los Verjels Land & Water Company	x	x		166	
14-K *p*	Los Verjels Land & Water Company	x	x		.....	180
14-U *p*	Lower Miner's Ravine	x	x		.....	181
10-C *p*	Lower Salinas Valley	x			.....	177
7-V *p*	Lower Valley Lands: Tulare Lake Bed and—	x		x	.....	176
1-P	Lugonia Water Company		x	x	126	
1-O	Lytle Creek Water & Improvement Company		x	x	126	
	M					
7-M	Madera Canal and Irrigation Company	x	x	x	145	
7-M *p*	Madera Irrigation District	x	x	x	.....	175
6-D	Marks and Rice Ditch			x	139	
16-D	Martin Canal	x		x	169	
1-O	Marygold Mutual Water Company		x	x	125	
13-S	Marysville: Farms between—and Wheatland	x		x	163	
7-T	Mathews Ditch	x		x	150	
5-C	McNally Canal	x			138	
9-B	McNiel Irrigation Company	x	x		157	
7-J *p*	Medano Irrigation District		x		.....	174
7-L	Mendota: Farms in vicinity of		x	x	144	
1-P	Mentone Irrigating Company		x	x	126	
7-I *p*	Merced Irrigation District	x	x	x	.....	174
6-D	Merryman Ditch	x		x	139	
14-V *p*	Michigan Bar Area	x			.....	181

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TABLE 6—(Continued). ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Section and key letter.	System or locality.	Data. G	N	M	Page index. Measured.	Proposed.
14-V	Michigan Bar Lands			x	167	
7-L	Miller and Lux Canal	x			144	
7-S	Mill Races	x		x	148	
14-A	Mills: Jas.—Orchards Corporation		x	x	165	
14-A *p*	Mills: Jas.—Orchards Corporation		x	x	.....	179
14-U *p*	Miner's Ravine: Lower	x	x		.....	181
14-U *p*	Miner's Ravine: Upper		x			181
2-E	Mission Valley	x			130	
1-H	Mission View Acres		x	x	122	
7-H *p*	Modesto and Turlock Irrigation Districts	x	x	x		174
7-F	Modesto Irrigation District	x	x	x	141	
7-F *p*	Modesto Irrigation District	x	x			174
16-H *p*	Modoc and Lassen County Valleys tributary to the Pit River		x	x		182
7-T	Modoc Ditch	x		x	150	
4-D	Mojave River Irrigation District		x		137	
4-D *p*	Mojave River Irrigation District		x	x		172
1-E	Moneta Water Company		x	x	120	
1-A	Montalvo Irrigation Company		x		117	
1-A	Montalvo Mutual Water Company		x		117	
1-C	Montebello Land and Water Company		x	x	119	
1-M	Monte Vista Irrigation Company		x		125	
1-D	Monte Vista Pipe Line Association		x	x	120	
13-X	Moore Ditch, Yolo County	x			164	
1-A	Mound Water Company		x		117	
1-O	Mount Vernon Water Company		x	x	126	
	N					
7-C	Naglee-Burke Irrigation District		x		140	
7-C *p*	Naglee-Burke Irrigation District	x				173
15-C	Napa Valley	x	x		167	
13-W	Natomas Company of California	x	x	x	164	
14-T	Natomas Water Company		x	x	167	
14-I *p*	Nevada Irrigation District	x	x	x		180
5-A	Newlands Project, U. S. R. S. (Truckee-Carson Project)	x	x	x	137	
5-A *p*	Newlands Project, U. S. R. S. (Truckee-Carson Project)	x	x	x	.....	172
14-J	Newtown Ditch		x		166	
16-E *p*	North Central Mountain Valleys	x			.....	182
14-S *p*	North Fork Ditch Company	x	x		.....	181
1-O	North Fork Water Company		x	x	126	
	O					
5-E	Oak Creek Area		x		138	
6-A	Oakdale Irrigation District	x		x	139	
6-A *p*	Oakdale Irrigation District		x	x	.....	172
7-T	Oakes Ditch	x		x	149	
1-U	Oceanside Mutual Water Company		x	x	129	
1-N	Old Settlers Water Company		x		125	
1-T *j*	Orange County Coastal Plain and Mesa		x	x	.....	170
13-F	Orland: Farms near		x	x	159	
13-F	Orland Project, U. S. R. S.	x	x	x	159	
13-F *p*	Orland Project, U. S. R. S.		x			177
14-E	Oroville Water Company			x	165	
14-F *p*	Oroville-Wyandotte Irrigation District	x	x	x		179
14-E	Oro Water, Light and Power Company		x		165	
2-E *p*	Otay and Tia Juana Valleys		x			171
5-C	Owens River	x			138	
5-D	Owens River and Big Pine Canal	x			138	
5-E	Owens River Canal	x			138	
	P					
14-E	Pacific Gas & Electric Co., 8 miles north of Oroville		x	x	165	
14-E	Pacific Gas & Electric Co., near Oroville		x	x	165	
14-O	Pacific Gas & Electric Co., Placer County		x	x	166	
7-T	Packwood Ditch	x		x	150	
11-D	Pajaro Valley Pumping Plants		x		158	
14-G	Palermo Land and Water Company	x	x	x	165	

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TABLE 6—(Continued). ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

NOTE—"x" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use. (*p*) Indicates data on proposed use. Lines not marked (*p*) refer to data on measured use.

TABLE 6—(Continued). ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Section and key letter.	System or locality.	Data. G	N	M	Page index. Measured.	Proposed.
2-E	San Diego: City of—		x		131	
2-D *p*	San Dieguito Mutual Water Company		x			171
1-L	San Dimas Water Company		x	x	123	
1-C	San Fernando Valley		x		119	
1-C *p*	San Fernando Valley		x			170
1-H	San Gabriel River		x		122	
1-G *p*	San Gabriel Valley	x				170
1-G	San Gabriel Valley Water Company		x	x	121	
1-R *p*	San Jacinto Valley & Corona Area		x	x		170
12-A	San Joaquin: Delta Lands of Sacramento and —Rivers		x	x	158	
12-A *p*	San Joaquin: Delta Lands of Sacramento and —Rivers	x	x	x		177
7-Q *p*	San Joaquin Valley	x	x	x		175
7-L	San Joaquin and Kings River Canal Company	x	x	x	144	
2-D *p*	San Luis Rey to Linda Vista Area		x	x		171
1-S *p*	Santa Ana River Lands		x	x		170
1-S	Santa Ana Valley Irrigation Company	x	x	x	128	
1-S	Santa Ana Valley: Twelve Systems in	x			128	
9-D *p*	Santa Barbara Coastal Plain		x			176
11-C *p*	Santa Clara Valley		x			177
1-B *p*	Santa Clara River Valley	x	x			170
1-A	Santa Clara Water & Irrigation Company	x	x	x	117	
9-C *p*	Santa Maria & Cuyama Valleys		x			176
9-C	Santa Maria Water Company	x	x	x	157	
1-B	Santa Paula Water Company			x	118	
1-B	Santa Paula Water Works	x	x	x	118	
	Santa Ysabel: See San Luis Rey to Linda Vista Area.					
1-A	Saticoy Development Company		x	x	117	
1-A	Saticoy Irrigation Company		x	x	117	
1-A	Saticoy Water Company		x	x	117	
16-O *p*	Secret Valley Irrigation District		x			182
1-S	Serrano Water Association		x		128	
1-B	Sespe Land & Water Company	x	x	x	119	
16-F *p*	Shasta County Valleys tributary to the Pit River		x	x		182
16-D	Shasta: Little—River	x			168	
16-D	Shasta: Little—Valley Springs		x		168	
16-C *p*	Shasta Valley: Lands in—	x		x		182
5-B	Shealy: Ranch near—		x		138	
14-P *p*	Sierra Foothills	x				180
11-B	Sixty Pumps, Santa Clara County		x		157	
16-D	Smith Canal	x		x	168	
11-B	Sorosis Canal	x	x		158	
16-D	Soule and Terwilliger Canal	x		x	168	
3-H	South Alamo Water Company				136	
1-A	Southern California Edison Company		x		117	
16-R *p*	Southern Lassen Irrigation District	x	x	x		183
13-Q	South Feather Land and Water Company	x	x	x	160–163	
1-P	South Mountain Water Company		x	x	126	
7-E	South San Joaquin Irrigation District	x	x	x	140	
7-E *p*	South San Joaquin Irrigation District	x	x	x		174
1-B	Southside Improvement Company	x	x	x	119	
14-O	South Yuba Ditch Company	x	x	x	166	
14-O	South Yuba Water Company	x	x		166	
10-A	Spreckels Sugar Co., Ranch No. 1		x		157	
2-E *p*	Spring Valley Irrigation District		x			171
2-E	Spring Valley Irrigation District: La Mesa, Lemon Grove, and—	x			131	
16-D	Stallcup Farm		x		169	
1-H	Standefer Water Company		x	x	121	
13-D	Stanford Vina Ranch	x		x	158	
13-D *p*	Stanford Vina Ranch	x	x	x		177
11-B	Statler Canal	x			158	
5-C	Stevens Canal	x			138	
7-Z	Stine Canal	x	x	x	156	
7-S	Stinson Canal	x		x	148	
7-A *p*	Stockton Area	x				173
7-U	Stockton Ditch	x			151	
1-B	Stringtown and Carmiche Ditch	x	x	x	118	
13-Z *p*	Suisun Irrigation District	x	x			179
13-Z *p*	Suisun Area	x	x			179
1-F	Sunny Slope Water Company		x	x	120	
1-N	Sunset Water Company of Cucamonga		x	x	125	
16-M *p*	Surprise Valley Irrigation District	x	x			182
13-R	Sutter-Butte Canal Company	x	x	x	160–163	

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TABLE 6.

TABLE 6—(Continued). ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Section and key letter.	System or locality.	Data. G	N	M	Page index. Measured.	Proposed.
13-R	Sutter Mutual Water Company	x	x	x	160–163	
7-T	Sweeney Ditch			x	150	
2-E	Sweetwater Water Company	x	x	x	131	
2-E *p*	Sweetwater Valley and Chula Vista Mesa		x			171
	T					
13-N	Tehama: Farms in—Glenn, Colusa and Yolo Counties	x	x	x	162	
1-R	Temescal Water Company		x	x	128	
1-R *p*	Temescal Water Company	x	x			170
6-F	Terra Bella Irrigation District	x	x	x	140	
6-F *p*	Terra Bella Irrigation District	x	x	x		173
6-F *p*	Terra Bella Irrigation Districts: Lindsay-Strathmore and—	x	x			173
1-O	Terrace Water Company		x	x	125	
16-D	Terwilliger No. 1 Canal	x		x	168	
16-D	Terwilliger No. 2 Canal			x	168	
1-B	Thermal Belt Water Company		x	x	118	
16-I	Thirty-two tracts on Pit River		x		169	
2-E *p*	Tia Juana: Otay and—Valleys		x			171
1-E	Torrance Water, Light & Power Company		x	x	120	
1-U	Trabuco Water Company		x	x	129	
13-N	Tracts in the Sacramento Valley	x		x	162	
13-N	Tracts west of Sacramento River	x		x	162	
5-A	Truckee-Carson Project, U. S. R. S. (Newlands Project)	x	x	x	137	
5-A *p*	Truckee-Carson Project, U. S. R. S. (Newlands Project)	x	x	x		172
1-C	Tujunga Water and Power Company		x		119	
7-T	Tulare Irrigation Company	x		x	149	
7-T	Tulare Irrigation District	x		x	150	
7-V *p*	Tulare Lake Bed and Lower Valley Lands	x		x		176
16-Q *p*	Tule Irrigation District	x				182
7-U	Tule River (Lands irrigated from)	x	x		151	
7-H	Turlock Irrigation District	x	x	x	142	
7-H *p*	Turlock Irrigation District	x	x			174
7-H *p*	Turlock Irrigation Districts: Modesto and—	x	x	x		174
1-B	Turner Ditch	x	x	x	118	
1-S	Twelve systems in Santa Ana Valley	x			128	
7-S	Turner-Riverdale Canal	x		x	147	
	U					
16-N	Union Land and Stock Company		x		169	
7-T	Uphill Ditch	x		x	151	
14-U *p*	Upper Miner's Ravine		x			181
	V					
1-H	Valley View Water Company		x	x	122	
1-A	Ventura County Power Company		x	x	117	
4-D	Victor Valley		x		137	
4-D *p*	Victor Valley		x			172
4-D	Victor Valley Irrigation District		x		137	
4-D *p*	Victor Valley Irrigation District		x			172
1-A	Vineyard Ditch Company		x	x	117	
2-D *p*	Volcan Land and Water Company		x			171

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TABLE 6—(Concluded.) ALPHABETICAL INDEX TO IRRIGATION SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

NOTE—"x" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use. (*p*) Indicates data on proposed use. Lines not marked (*p*) refer to data on measured use.

TABLE 7. INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	VENTURA					
1-A	Mound Water Company		x		117	
1-A	Southern California Edison Company		x		117	
1-A	Ventura County Power Company		x	x	117	
1-A	Del Norte Water Company		x		117	
	MONTALVO					
1-A	Montalvo Mutual Water Company		x		117	
1-A	Montalvo Irrigation Company		x		117	
	SATICOY					
1-A	Alta Mutual Water Company				117	
1-A	Saticoy Development Company		x	x	117	
1-A	Saticoy Water Company		x	x	117	
1-A	Saticoy Irrigation Company		x	x	117	
1-A	Vineyard Ditch Company		x	x	117	
1-A	Santa Clara Water & Irrigation Company	x	x	x	117	
	SANTA PAULA					
1-B	San Cayetano Mutual Water Company		x		117	
1-B	Santa Paula Water Works	x	x	x	118	
1-B	Santa Paula Water Company			x	118	
1-B	Farmers Irrigation Company		x	x	118	
1-B	Thermal Belt Water Company		x	x	118	
1-B	Farmers Ditch Company				118	
	SANTA CLARA RIVER VALLEY					
1-B *p*	Santa Clara River Valley	x	x		----------	170
1-B	Camulos Ditch	x	x	x	118	
1-B	Hardgrave and Comfort Ditch	x	x	x	118	
1-B	Stringtown and Carmicle Ditch	x	x	x	118	
1-B	Hardison Ranch Company	x	x		118	
1-B	Turner Ditch	x	x	x	118	
1-B	Atmore Ditch	x	x		118	
1-B	Interurban Land & Water Company	x	x	x	118	
1-B	Pumping Plants, Santa Clara River Valley		x		118	
1-B	River Street Canal	x		x	119	
1-B	Walnut Irrigation District		x	x	119	
	SESPE					
1-B	Sespe Land & Water Company	x	x	x	119	
	FILLMORE					
1-B	Fillmore Irrigation Company	x	x	x	119	
1-B	Fillmore Water Company		x		119	
1-B	Southside Improvement Company	x	x	x	119	
	PIRU					
1-B	Piru Water Company	x	x	x	119	
	SAN FERNANDO					
1-C	San Fernando Valley		x		119	
1-C *p*	San Fernando Valley		x		----------	170
1-C	Montebello Land & Water Company		x	x	119	
1-C	Haines Canyon Water Company		x	x	119	
1-C	Carmel Water Company		x	x	119	
1-C	Tujunga Water & Power Company		x		119	
	SANTA MONICA					
1-D	Ballona Irrigation Association		x	x	120	
1-D	La Rica Water Company		x	x	120	
1-D	Monte Vista Pipe Line Association		x	x	120	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	Data. N	Data. M	Page index. Measured.	Page index. Proposed.
	GARDENA					
1-E	Gardena Water Supply Company		x	x	120	
1-E	East Gardena Water Company		x	x	120	
1-E	Moneta Water Company		x	x	120	
1-E	Torrance Water, Light & Power Company		x	x	120	
1-E	Bell Water Company		x		120	
	PASADENA					
1-F	Consolidated Water Company		x		120	
1-F	Crown Water Company		x	x	120	
1-F	Rubio Canyon Water & Land Association		x	x	120	
1-F	Sunny Slope Water Company		x	x	120	
1-F	California-Michigan Land & Water Company		x		121	
	SAN GABRIEL					
1-G (p)	San Gabriel Valley	x				170
1-G	Euclid Avenue Water Company		x	x	121	
1-G	San Gabriel Valley Water Company		x	x	121	
1-G	Garvey Water Company		x		121	
	WHITTIER					
1-G	California Domestic Water Company	x	x		121	
1-H	Cate Ditch Company		x	x	121	
1-H	Standefer Water Company		x	x	121	
1-H	Los Nietos Irrigation Company		x	x	121	
1-H	Whittier Water Company		x	x	121	
1-H	Banta Ditch Association		x		122	
1-H	Rincon Ditch Company		x	x	122	
1-H	Whittier Extension Mutual Water Company		x		122	
1-H	San Gabriel River		x		122	
1-H	Valley View Water Company		x	x	122	
1-H	Boulevard Water Company			x	122	
1-H	Mission View Acres		x	x	122	
1-H	Fruitland Water Company		x	x	122	
1-H	Arroyo Ditch and Water Company		x	x	122	
1-H	San Antonio Irrigation Company		x	x	122	
	PUENTE					
1-I	Puente Land & Water Company		x		122	
1-I	Little Lake Ditch			x	122	
	BALDWIN PARK					
1-J	Baldwin Park Water Company		x		122	
	COVINA					
1-J	Columbia Land & Water Company		x	x	122	
1-J	Covina Irrigation Company		x	x	122	
1-J	Lands near Covina	x			123	
	DUARTE					
1-K	Duarte Mutual Irrigation & Canal Company		x		123	
1-K	Beardslee Water Ditch Company		x	x	123	
1-K	Walnut Grove Mutual Water Company		x	x	123	
	AZUSA					
1-K	Azusa Irrigation Company		x	x	123	
	GLENDORA					
1-K	Glendora Irrigation Company		x	x	123	
1-K	Glendora Mutual Water Company		x		123	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	SAN DIMAS					
1-L	San Dimas Water Company		x	x	123	
1-L	La Verne Irrigation Company		x	x	123	
	CLAREMONT					
1-L	Claremont Cooperative Water Company		x	x	123	
	LA VERNE					
1-L	La Verne Land & Water Company		x	x	123	
	POMONA					
1-M	Irrigation Company of Pomona		x	x	124	
1-M	Del Monte Irrigation Company		x		124	
1-M	Palomares Irrigation Company		x	x	124	
1-M	Pomona Irrigation Company		x		124	
1-M	Farms near Pomona		x		124	
1-M	Pomona Ranch Water Company		x	x	124	
1-M	Canyon Water Company		x	x	124	
1-M *p*	Pomona Valley & Cucamonga Plains		x		.....	170
	CHINO					
1-M	Chino Water Company		x	x	124	
	ONTARIO					
1-M	San Antonio Water Company		x	x	125	
1-M	Monte Vista Irrigation Company		x		125	
	ALTA LOMA					
1-M	Alta Loma Mutual Water Company		x		125	
1-N	Lamosa Water Company		x	x	125	
	CUCAMONGA					
1-N	Old Settlers Water Company		x		125	
1-N	Sunset Water Company of Cucamonga		x	x	125	
1-N	Cucamonga Water Company		x	x	125	
	ETIWANDA					
1-N	Etiwanda Water Company		x	x	125	
	FONTANA					
1-N	Fontana Development Company	x	x	x	125	
1-N	Del Rosa Water Company		x		125	
	BLOOMINGTON					
1-O	Marygold Mutual Water Company		x	x	125	
1-O	Citizens Land & Water Company	x	x	x	125	
	COLTON					
1-O	Terrace Water Company		x	x	125	
	SAN BERNARDINO					
1-O	Mount Vernon Water Company		x	x	126	
1-O	North Fork Water Company		x	x	126	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	RIALTO					
1-O	Lytle Creek Water & Improvement Company		x	x	126	
	HIGHLANDS					
1-O	City Creek Water Company	x		x	126	
	REDLANDS					
1-P	Bear Valley Mutual Water Company	x	x	x	126	
1-P	Lugonia Water Company		x	x	126	
1-P	South Mountain Water Company		x	x	126	
	MENTONE					
1-P	Mentone Irrigating Company		x	x	126	
	RIVERSIDE					
1-Q *p*	San Bernardino Valley and Riverside Area		x			170
1-Q	Gage Canal	x	x	x	126	
1-Q	West Riverside Canal Company		x	x	126	
1-Q	Riverside Water Company	x	x	x	127	
1-Q	Riverside-Highland Water Company		x		128	
1-Q	Rivino Water Company		x		128	
	YORBA LINDA					
1-R	Yorba Linda Water Company		x	x	128	
	CORONA					
1-R *p*	Temescal Water Company		x			170
1-R	Temescal Water Company		x	x	128	
1-R *p*	San Jacinto Valley and Corona Area		x	x		170
	ORANGE					
1-S	Santa Ana Valley Irrigation Company	x	x	x	128	
1-S	Twelve systems in Santa Ana Valley	x			128	
1-S *p*	Santa Ana River Lands		x	x		170
	EL MODENA					
1-S	Serrano Water Association		x		128	
1-S	J. T. Carpenter Water Company		x		128	
	ANAHEIM					
1-S	Anaheim Union Water Company	x	x	x	128	
	HERMOSA					
1-T	Hermosa Water Company		x	x	128	
1-T *p*	Orange County Coastal Plain and Mesa		x	x		170
	CAPISTRANO					
1-U	Capistrano Water Company		x	x	129	
1-U	Trabuco Water Company		x	x	129	
	YUCAIPA					
2-A	Yucaipa Water Company No. 1	x	x		129	
2-A *p*	Yucaipa Valley & San Gorgonio Pass		x	x		171
	BEAUMONT					
2-B	Beaumont Irrigation District	x	x	x	129	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	BANNING					
2-B	Banning Heights Mutual Water Company		x	x	129	
2-B	Banning Water Company		x	x	129	
2-B	Cabezon Water Company		x	x	129	
	HEMET					
2-C	Fruitvale Water Company, San Jacinto		x		129	
2-C	Lake Hemet Water Company		x	x	130	
2-D	Oceanside Mutual Water Company		x	x	129	
2-D p	Volcan Land & Water Company		x		----------	171
2-D p	San Luis Rey to Linda Vista Area		x	x	----------	171
2-D p	San Dieguito Mutual Water Company		x		----------	171
	ESCONDIDO					
2-D	Escondido Mutual Water Company		x	x	130	
2-D p	Linda Vista Mesa		x		----------	171
	MISSION VALLEY	x				
2-E	Mission Valley				130	
	SAN DIEGO					
2-E	Cuyamaca Water Company		x	x	130	
2-E	La Mesa, Lemon Grove, and Spring Valley Irrigation District	x			131	
2-E p	Spring Valley Irrigation District	x	x		----------	171
2-E	Sweetwater Water Company		x	x	131	
2-E p	Sweetwater Valley and Chula Vista Mesa		x		----------	171
2-E p	El Cajon Valley		x		----------	171
2-E	City of San Diego		x		131	
2-E p	Otay and Tia Juana Valleys		x		----------	171
	MISCELLANEOUS					
2-	Average of 18 Mutual Water Companies		x		131	
	Average of 56 Mutual Water Companies		x		131	
	INDIO					
3-A	Coachella Valley Farms		x	x	132	
	CALIPATRIA					
3-B	Imperial Water Company No. 3	x	x	x	132	
3-B	Imperial Water Company No. 9	x			132	
	BRAWLEY					
3-C	Imperial Water Company No. 4	x		x	132	
3-C	Imperial Water Company No. 8	x	x	x	132	
	IMPERIAL					
3-D	Imperial Water Company No. 12	x	x	x	133	
3-D	Imperial Water Company No. 2	x		x	133	
	EL CENTRO					
3-E	Imperial Water Company No. 1	x	x	x	133	
	(IMPERIAL VALLEY)					
3-F p	Imperial Valley		x		----------	171
3-F	Imperial Irrigation District	x	x	x	134	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	HOLTVILLE					
3-G	Imperial Water Company No. 5	x	x	x	134	
3-G	Imperial Water Company No. 7	x	x	x	135	
3-G	Imperial South Side Water Company	x	x	x	135	
	CALEXICO					
3-H	Imperial East Side Water Company	x		x	136	
3-H	South Alamo Water Company				136	
3-H	Imperial Water Company No. 6	x		x	136	
	BARD					
3-I *p*	Yuma Project, U. S. R. S.		x	x		171
3-I	Yuma Project, U. S. R. S.	x	x	x	136	
	BLYTHE					
3-J	Palo Verde Mutual Water Company	x	x	x	137	
	PALMDALE					
4-A	Palmdale Water Company		x	x	137	
4-A *p*	Palmdale Water Company	x				172
4-A *p*	Palmdale Irrigation District	x				172
	LITTLE ROCK					
4-B	Little Rock Irrigation District		x	x	137	
4-C	Appleton Land, Water & Power Company		x		137	
	VICTORVILLE					
4-D	Mojave River Irrigation District		x		137	
4-D *p*	Mojave River Irrigation District		x	x		172
4-D	Victor Valley Irrigation District		x		137	
4-D *p*	Victor Valley Irrigation District		x			172
4-D	Victor Valley		x		137	
4-D *p*	Victor Valley		x			172
5-A *p*	Newlands Project, U. S. R. S.	x	x	x		172
5-A	Newlands Project, U. S. R. S.	x	x	x	137	
	MARKLEEVILLE					
5-B	Ranch near Shealy		x		138	
5-C	Dell Canal	x			138	
5-C	Rawson Canal	x			138	
5-C	Bishop Creek Association	x			138	
5-C	McNally Canal	x			138	
5-C	Farmers Canal	x			138	
5-C	Bishop Creek Canal	x		x	138	
5-C *p*	Bishop Creek Canal	x	x	x		172
5-C	Owens River	x			138	
5-C	Stevens Canal	x			138	
5-D	Owens River and Big Pine Canal	x			138	
	INDEPENDENCE					
5-E	Owens River Canal	x			138	
5-E	Oak Creek Area		x		138	
	OAKDALE					
6-A	Oakdale Irrigation District	x		x	139	
6-A *p*	Oakdale Irrigation District		x	x		172
	WATERFORD					
6-B *p*	Waterford Irrigation District		x			172

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TABLE 7.

TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	VISALIA					
6-C	Foothill Ditch Company	x		x	139	
6-D	Marks and Rice Ditch			x	139	
6-D	Lemon Cove Ditch	x		x	139	
6-D	Merryman Ditch	x		x	139	
6-E	Lindsay-Strathmore Irrigation District	x	x	x	139	
6-E *p*	Lindsay-Strathmore Irrigation District	x	x	x	----------	173
6-E	Lindsay Water Development Company		x		139	
	TERRA BELLA					
6-F	Terra Bella Irrigation District	x	x	x	140	
6-F *p*	Terra Bella Irrigation District	x	x	x	----------	173
6-F *p*	Lindsay-Strathmore and Terra Bella Irrigation Districts	x	x		----------	173
	LODI					
7-A *p*	Woodbridge Area, U. S. R. S.		x		----------	173
	STOCKTON					
7-A *p*	Stockton Area	x			----------	173
	KNIGHTSEN					
7-B *p*	Lone Tree Irrigation District		x		----------	173
7-B *p*	Knightsen Irrigation District	x	x		----------	173
	BRENTWOOD					
7-B	East Contra Costa Irrigation Company	x	x	x	140	
	BETHANY					
7-C	West Side Irrigation District	x	x	x	140	
7-C *p*	West Side Irrigation District	x	x	x	----------	173
7-C *p*	Byron-Bethany Irrigation District	x	x		----------	173
7-C	Byron-Bethany Irrigation District			x	140	
	TRACY					
7-C	Naglee-Burke Irrigation District		x		140	
7-C *p*	Naglee-Burke Irrigation District	x			----------	173
7-C *p*	Kasson Irrigation District	x		x	----------	173
7-C	Riverview Farm and Water Company		x		140	
	CARBONA					
7-C *p*	Banta-Carbona Irrigation District	x	x	x	----------	173
	WESTLEY					
7-D *p*	West Stanislaus Irrigation District		x		----------	173
	MANTECA					
7-E	South San Joaquin Irrigation District	x	x	x	140	
7-E *p*	South San Joaquin Irrigation District	x	x	x	----------	174
	MODESTO					
7-F	Modesto Irrigation District	x	x	x	141	
7-F *p*	Modesto Irrigation District	x	x		----------	174
	PATTERSON					
7-G	Patterson Water Company	x	x	x	142	
7-G	Patterson Pump	x			142	

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TABLE 7.

TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	TURLOCK					
7-H *p*	Turlock Irrigation District	x	x			174
7-H	Turlock Irrigation District	x	x	x	142	
7-H *p*	Modesto and Turlock Irrigation Districts	x	x	x		174
	LIVINGSTON					
7-I *p*	American Seedless Raisin Company		x			174
7-I	American Seedless Raisin Company		x	x	141	
	MERCED					
7-I *p*	Merced Irrigation District	x	x	x		174
7-I	Crocker-Huffman Land & Water Company	x		x	141	
	CHOWCHILLA					
7-J *p*	California Packing Corporation		x			175
7-J *p*	Madano Irrigation Project		x			174
7-K *p*	Chowchilla Irrigation District (Projected)	x	x			175
7-L	San Joaquin & Kings River Canal Company	x	x	x	141	
7-L	Miller & Lux Canal	x			144	
	MENDOTA					
7-L	Farms in vicinity of Mendota		x	x	144	
7-L	Brown Slough			x	144	
7-L	Also Canal	x		x	141	
7-L	Chowchilla Canal			x	145	
7-L	Helm Canal			x	145	
	MADERA					
7-M *p*	Madera Irrigation District	x	x	x		175
7-M	Madera Canal and Irrigation Company	x	x	x	145	
7-M	Blythe Canal	x			145	
7-M	East Side Canal	x		x	145	
7-M	Columbia Canal			x	145	
	FRESNO					
7-O	James Pump, Fresno Slough	x			145	
7-O	James Irrigation District			x	145	
7-P	Lone Tree Canal			x	145	
7-P	Fresno Canal	x		x	145	
7-P	Gould Canal			x	146	
7-P	Fresno-Gould Canal	x		x	146	
7-P *p*	Fresno Irrigation District	x	x			175
7-Q	Alta Irrigation District	x		x	146	
7-Q *p*	King's River Areas	x	x			175
7-Q *p*	San Joaquin Valley	x	x	x		175
7-R	Consolidated Canal Company	x		x	146	
7-R	Farms near Reedley		x		147	
7-R	Island No. 3, Consolidated and Les Emigrants	x			147	
7-R *p*	Island No. 3 Irrigation District	x				175
7-R *p*	Consolidated Irrigation District	x				175
7-S	Emigrant Canal	x		x	147	
7-S	Island Canal			x	147	
7-S	Beta Main Canal			x	147	
7-S	Peoples Ditch Company	x		x	147	
7-S	"A" Canal			x	147	
7-S	Grant Canal			x	147	
7-S	Turner-Riverdale Canal	x		x	147	
7-S	Crescent Canal	x		x	147	
7-S	Stinson Canal	x		x	148	
7-S	Cuthbert-Barrel Canal	x		x	148	
7-S	Last Chance Water Ditch Company	x		x	148	
7-S	Mill Races	x		x	148	
7-S	Reed Canal	x		x	148	
7-S	Liberty Canal	x		x	148	
7-S	Laguna Irrigation District	x			148	
7-S	Lake Lands Canal	x		x	148	
7-S *p*	Kings River Conservancy District	x		x		175

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G		M	Page index. Measured.	Proposed.
	FRESNO—Continued.					
7-S	Foothill Irrigation District		x		148	
7-S *p*	Foothill Irrigation District	x				176
	HANFORD					
7-S	Lemoore Canal & Irrigation Company	x		x	148	
	VISALIA					
7-T	Peoples' Consolidated Ditch	x		x	149	
7-T	Farmers' Ditch	x		x	149	
7-T	Evans' Ditch	x		x	149	
7-T	Fleming Ditch	x		x	149	
7-T	Persian Ditch	x		x	149	
7-T	Oakes Ditch	x		x	149	
7-T	Tulare Irrigation Company	x		x	149	
7-T	Tulare Irrigation District	x		x	150	
7-T	Packwood Ditch	x		x	150	
7-T	Lakeside Ditch	x		x	150	
7-T	Goshens Ditch	x		x	150	
7-T	Sweeney Ditch			x	150	
7-T	Hamilton Ditch			x	150	
7-T	Wutchumna-Barton Cut			x	150	
7-T	Wutchumna Ditch			x	150	
7-T	Kaweah River (area irrigated by)	x			150	
7-T	Jennings Ditch	x		x	150	
7-T	Mathews Ditch	x		x	150	
7-T	Modoc Ditch	x		x	150	
7-T	Uphill Ditch	x		x	151	
7-U	Tule River (Lands irrigated from)	x	x		151	
7-U	Pioneer Ditch	x		x	151	
7-U	Burton Ditch	x			151	
7-U	Poplar Ditch	x		x	151	
7-U	Stockton Ditch	x			151	
7-V *p*	Tulare Lake Bed and Lower Valley Lands	x		x		176

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	ALPAUGH					
7-W *p*	Alpaugh Irrigation District	x	x	x		176
7-W	Alpaugh Irrigation District	x	x	x	151	
7-W	Area irrigated from White River	x			151	
7-W	Area irrigated from Deer Creek	x			151	
	WASCO					
7-X	Galloway Canal	x	x	x	152	
7-X	Lerdo Canal	x	x	x	152	
7-Y	Anderson Canal	x	x	x	152	
	BAKERSFIELD					
7-Y	Farmers Canal	x	x	x	153	
7-Y	Castro Canal	x		x	153	
7-Y	Beardsley Canal	x	x	x	153	
7-Y	East Side Canal, Kern River	x	x	x	154	
7-Y	Kern Island Canal	x	x	x	154	
7-Y	Kern River Canal & Irrigation Company	x	x	x	155	
7-Y	Central Canal & Irrigation Company	x	x	x	155	
7-Z	James Canal	x	x	x	155	
7-Z	Carmichael Slough Ditch			x	155	
7-Z	Jap Canal			x	155	
7-Z	Pioneer Canal	x	x	x	156	
7-Z	Buena Vista Canal	x	x	x	156	
7-Z	Stine Canal	x	x	x	156	
7-Z *p*	Kern River Areas	x	x	x		176
7-Z *p*	Kern River Delta	x				176
	GOSFORD					

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	MENDOTA					
8-A	Ensher and Alexander Farm		x	x	157	
8-B *p*	West Side San Joaquin Valley	x				176
8-C	Boston Land Company		x		157	
	COALINGA					
	ATASCADERO					
9-A *p*	Atascadero Colony		x			176
	ARROYO GRANDE					
9-B	McNiel Irrigation Company	x	x		157	
	SANTA MARIA					
9-C	Santa Maria Water Company	x	x	x	157	
9-C *p*	Santa Maria & Cuyama Valleys		x			176
	SANTA BARBARA					
9-D *p*	Santa Barbara Coastal Plain		x			176
9-D	Gobernador Land & Water Company		x	x	157	
	SALINAS					
10-A	Spreckels Sugar Company, Ranch No. 1		x		157	
10-B	Salinas Valley		x		157	
10-C *p*	Lower Salinas Valley	x				177
	NILES					
11-A	Alameda County Water District		x	x	157	
	SAN JOSE					
11-B	Sixty pumps, Santa Clara County		x		157	
11-B	Pioneer Canal	x	x		158	
11-B	Sorosis Canal	x	x		158	
11-B	Kirk Canal	x	x		158	
11-B	Paul Masson Canal	x	x		158	
11-B	Statler Canal	x			158	
11-C *p*	Santa Clara Valley		x			177
	GILROY					
11-D	Pajaro Valley Pumping Plants		x		158	
12-A	Delta Lands of Sacramento and San Joaquin Rivers		x	x	158	
12-A *p*	Delta Lands of Sacramento and San Joaquin Rivers	x	x	x		177
	REDDING					
13-A *p*	Anderson-Cottonwood Irrigation District	x	x	x		177
13-B *p*	El Camino Irrigation District		x			177
13-B	El Camino Irrigation District	x	x		158	
	TEHAMA					
13-C	Los Molinos Area		x	x	158	
13-C *p*	Los Molinos Land Company (Coneland Water Co.)	x	x	x		177
13-C	Los Molinos Land Company (Coneland Water Co.)	x	x	x	158	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	LOS MOLINOS					
13-D *p*	Stanford-Vina Ranch	x	x	x	----------	177
13-D	Stanford-Vina Ranch	x		x	158	
	VINA					
13-E *p*	Lands under Iron Canyon Reservoir Project	x	x	x	----------	177
13-F	Farms near Orland		x	x	159	
13-F	Orland Project, U. S. R. S.	x	x	x	159	
13-F *p*	Orland Project, U. S. R. S.		x		----------	177
	ORLAND					
13-H	Durham State Land Settlement	x			159	
	CHICO					
13-K	Farms near Willows		x	x	159	
13-M	Glenn-Colusa Irrigation District		x		159	
13-M	Central Canal	x		x	159	
13-M	Sacramento Valley, West Side Canal Company	x	x	x	159	
	WILLOWS					
13-O	Farms near Gridley		x	x	160	
	GRIDLEY					
13-P	Colusa Irrigation Company	x		x	160	
	COLUSA					
13-Q	South Feather Land & Water Company	x	x	x	160	
13-Q	Alicia Mutual Water Company	x			160	
13-Q	Farm Land Investment Company	x			160	
13-Q *r*	Cordua Irrigation District	x	x	x	----------	177
13-Q *p*	Feather River Area	x			----------	178
	MARYSVILLE					
13-R	Sutter Mutual Water Company	x	x	x	160	
13-R	Sutter-Butte Canal Company	x	x	x	160	
13-R *p*	Feather River Irrigation District	x	x	x	----------	178
	NICOLAUS					
	RICE PREDOMINATING CROP					
	CHICO					
13-G	Parrott & Phelan Plant near Chico	x	x	x	161	
	WILLOWS					
13-I	Great Western Power Company (Western Canal Company)	x	x	x	161	
13-J	Farms east of Sacramento River	x	x	x	161	
13-L *p*	Jacinto Irrigation District	x		x	----------	178
13-M *p*	Princeton-Cadora-Glenn Irrigation District	x		x	----------	178
13-M	Sacramento Valley West Side Canal Company	x	x	x	161	
	COLUSA					
13-M *p*	Glenn-Colusa Irrigation District	x	x	x	----------	178
13-M	Glenn-Colusa Irrigation District	x	x	x	162	
13-N *p*	Provident Irrigation District	x			----------	178
13-N *p*	Rice Lands of Sacramento Valley		x		----------	178
13-N	Tracts west of Sacramento River	x		x	162	
13-N	Farms in Tehama, Glenn, Colusa and Yolo Counties	x	x	x	162	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	COLUSA Continued.					
13-N	Tracts in the Sacramento Valley	x		x	162	
13-Q	Alicia Mutual Water Company	x			162	
13-Q	Farm Land Investment Company	x			163	
13-Q	Cordua Irrigation District		x		163	
13-Q	South Feather Land & Water Company	x	x	x	163	
13-R	Sutter Mutual Water Company	x	x	x	163	
13-R	Sutter-Butte Canal Company	x	x	x	163	
13-S	Farms between Marysville and Wheatland	x		x	163	
	MARYSVILLE					
13-T	Reclamation District No. 108	x	x	x	163	
	WOODLAND					
13-X	Yolo Water and Power Company		x	x	164	
	(End of Rice Data.)					
	NICOLAUS					
13-U	Sacramento Valley		x	x	164	
13-U *p*	Sacramento Valley	x				178
13-V *p*	Sacramento-Lincoln Area	x				178
13-W	Natomas Company of California	x	x	x	164	
	SACRAMENTO					
13-X	Farms near Woodland		x	x	164	
13-X	Moore Ditch, Yolo County	x			164	
13-X	Yolo Water & Power Company		x	x	164	
13-X *p*	Yolo Water & Power Company	x	x	x		178
13-X *p*	Woodland Area	x				179
	WOODLAND					
13-Y	Dixon Area		x	x	165	
13-Y *p*	East Dixon Irrigation and Drainage Association		x			179
	DIXON					
13-Z *p*	Suisun Irrigation District	x	x			179
13-Z *p*	Suisun Area	x	x			179
	SUISUN					
	MAXWELL					
14-A *p*	Jas. Mills Orchards Corporation		x	x		179
14-A	Jas. Mills Orchards Corporation		x	x	165	
14-B *p*	Elder Creek Area		x	x		179
14-C *p*	Happy Valley Irrigation District	x	x	x		179
14-C	Happy Valley Irrigation District		x		165	
	OLINDA					
14-D *p*	Paradise Irrigation District		x			179
14-D	Paradise Irrigation District	x	x	x	165	
14-E	Pacific Gas & Electric Company, 8 miles north of Oroville		x	x	165	
14-E	Oro Water, Light & Power Company		x		165	
14-E	Pacific Gas & Electric Company near Oroville		x	x	165	
14-E	Oroville Water Company			x	165	
	OROVILLE					
14-F *p*	Oroville-Wyandotte Irrigation District	x	x	x		179
14-G	Palermo Land & Water Company	x	x	x	165	

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	OROVILLE—Continued.					
14-G *p*	Palermo Land & Water Company		x			179
14-H *p*	Honcut-Yuba Irrigation District	x	x	x		179
	HONCUT					
14-H *p*	Lands under Grizzly Creek, Butte and Yuba counties	x	x	x		180
14-I	Newtown Ditch		x		166	
14-I	Excelsior Water & Mining Company	x	x	x	166	
14-I *p*	Nevada Irrigation District	x	x	x		180
	NEVADA CITY					
14-J	Browns Valley Canal		x		166	
14-J *p*	Browns Valley Irrigation District		x	x		180
14-K *p*	Los Verjels Land & Water Company	x	x			180
14-K	Los Verjels Land & Water Company	x	x		166	
14-K	Feather River Valley Farms		x		166	
14-L *p*	Yuba, Nevada, Sutter, Water and Power Association	x		x		180
14-L *p*	Feather River Area	x				180
	MARYSVILLE					
14-M *p*	Coon Creek Area		x			180
14-N *p*	Placer County Fruit Lands		x	x		180
14-O	Pacific Gas & Electric Company, Placer County		x	x	166	
14-O	Gold Hill Water Company	x			166	
14-O	Bear River Water Company	x	x		166	
14-O	South Yuba Ditch Company	x	x	x	166	
14-O	South Yuba Water Company	x	x		166	
	AUBURN					
14-P *p*	Sierra Foothills	x				180
14-Q	El Dorado Water Company		x	x	167	
14-Q *p*	Placerville Area		x			180
14-Q *f*	Diamond Ridge Water Company	x	x	x		181
	PLACERVILLE					
14-Q *p*	H. Parker Farm, El Dorado County		x	x		181
14-R	American Canyon Water Company		x		167	
14-S *p*	Citrus Heights Irrigation District		x	x		181
14-S *p*	North Fork Ditch Company	x	x			181
14-S *p*	Carmichael Irrigation District		x	x		181
	FAIR OAKS					
14-T *p*	Fair Oaks Irrigation District		x	x		181
14-T	Fair Oaks Irrigation District		x	x	167	
14-T	Natomas Water Company		x	x	167	
14-U *p*	Upper Miner's Ravine		x			181
14-U *p*	Lower Miner's Ravine	x	x			181
14-U *p*	Rock and Walker Creeks Area		x	x		181
	FOLSOM					
14-V	Michigan Bar Lands			x	167	
14-V *p*	Michigan Bar Area	x				181
	COVELO					
15-A *p*	Round Valley Indian Reservation	x	x			181

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TABLE 7—(Continued). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data. G	N	M	Page index. Measured.	Proposed.
	MONTICELLO					
15-B	Rancho Lenoso, Berryessa Valley	x	x	x	167	
	NAPA					
15-C	Napa Valley	x	x		167	
	KLAMATH FALLS					
16-A *p*	Klamath Project, U. S. R. S.		x	x		182
16-A	Klamath Project, U. S. R. S.	x	x	x	167	
16-A *p*	Klamath River Lands	x		x		182
	YREKA					
16-B	Cottonwood Irrigation & Mining Company		x	x	168	
	GRENADA					
16-C *p*	Grenada Irrigation District		x			182
16-C *p*	Lands in Shasta Valley	x		x		182
16-D	Little Shasta River	x			168	
16-D	Little Shasta Valley Springs		x		168	
16-D	Terwilliger No. 1 Canal	x		x	168	
16-D	Terwilliger No. 2 Canal			x	168	
16-D	Soule and Terwilliger Canal	x		x	168	
16-D	Company Canal	x		x	168	
16-D	Babcock, Soule & Martin Canal	x		x	168	
16-D	Hart & Hoyt Canal	x		x	168	
16-D	Smith Canal	x		x	168	
16-D	Haight, Dexter & Kegg Canal	x		x	168	
16-D	Kegg Canal	x		x	168	
16-D	Martin Canal	x		x	169	
16-D	Stallcup Farm		x		169	
16-E *p*	North-Central Mountain Valleys	x				182
	BURNEY					
16-F *p*	Shasta County Valleys tributary to the Pit River		x	x		182
	BIEBER					
16-G *p*	Big Valley, Lassen County		x	x		182
16-H *p*	Modoc and Lassen County Valleys tributary to the Pit River		x	x		182
16-I	Pit River Ditch & Dam Company	x	x		169	
16-I	Thirty-two tracts on Pit River		x		169	
	ALTURAS					
16-J	Pit River Valleys near Alturas		x		169	

NOTE—"x" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use. (*p*) Indicates data on proposed use. Lines not marked (*p*) refer to data on measured use.

TABLE 7—(Concluded). INDEX BY SECTIONS AND KEY LETTERS ON MAP, PLATE V, TO SYSTEMS LISTED IN TABLES 8 AND 9 ON USE OF WATER.

Systems Lie Approximately on Line Between Consecutive Towns as Listed.

Section and key letter.	System or locality under irrigation.	Data.			Page index.	
		G	N	M	Measured.	Proposed.
	LIKELY					
16-K *p*	Crooks Canyon Irrigation District	x			----------	182
16-L	Jess Valley	x	x	x	169	
	CEDARVILLE					
16-M *p*	Surprise Valley Irrigation District	x	x		----------	182
	MADELINE					
16-N	Union Land & Stock Company		x		169	
	KARLO					
16-O *p*	Secret Valley Irrigation District		x		----------	182
	SUSANVILLE					
16-P	Lassen Irrigation Company		x		169	
16-Q *p*	Tule Irrigation District	x			----------	182
16-Q *p*	Honey Lake Valley Irrigation District	x	x	x	----------	182
16-Q *p*	Honey Lake Valley		x		----------	183
	DOYLE					
16-R *p*	Long Valley Creek Irrigation District	x	x		----------	183
16-R *p*	Southern Lassen Irrigation District	x	x	x	----------	183
	GREENVILLE					
16-S	Round Valley Reservoir, Plumas County	x			169	

NOTE—"x" in columns under G, N, or M indicates whether the collected data consists of Gross annual use, Net annual use, or Monthly use (*p*) Indicates data on proposed use. Lines not marked (*p*) refer to data on measured use.

TABLE 8. USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet	Feet.	P.ct.		P ct.	P.ct.	P ct.	P ct.	P ct	P.ct	P ct	P.ct.	P.ct	P ct	P ct.	P.ct	P.ct	P ct	P ct	P ct.
1-A	Mound Water Co. (*a*) (*b*)	792	.....	1 00	.....	1918	.....	30 3	.....	69 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Southern California Edison Co. (*a*) (*b*)	3,000	.....	2 78	.....	1918	.....	28 3	.....	71 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Ventura County Power Co. (*a*)	3.000	.....	2 70	.....	1909	.....	28 0	.....	72 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
1-A	Del Norte Water Co. (*a*) (*b*)	3,365	.....	0.06	.....	1918	.....	.....	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Montalvo Mutual Water Co. (*a*)	906	.....	0 80	.....	1918	.....	51.3	.....	48 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Montalvo Irrigation Co. (*a*)	126	.....	1.27	....	1918	.....	.....	....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Alta Mutual Water Co., Saticoy (*a*)	380	.....	.....	.....	1918	.....	92 0	....	8 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Saticoy Development Co	550	.....	05	.....	1909	.....	.....	.....	.....	.....	.....	.....	*d*	*x*	*x*	*x*	*x*	.....	.....	.....	.....
		528	.....	1 27	.....	*a*1918	.....	96 3	.....	3 7	.....	.....	.....	*e*	.....	.....	.....	.....	.....	.....	.....	.....
1-A	Saticoy Water Co. (*e*)	150	....	0 67	....	1909	....	50 0	.....	50 0	.....	.....	.....	.....	*x*	*x*	*x*	*x*	.....	.....	.....	.....
1-A	Saticoy Irrigation Co. (*a*)	450	....	1 00	.....	1909	....	56 0	.....	44 0	.....	.....	.....	.....	*x*	*x*	*x*	*x*	.....	.....	.....	.....
1-A	Vineyard Ditch Co (*a*)	400	....	0 63	....	1909	.....	.....	.....	100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....
1-A	Santa Clara Water and Irrigation Co. (*a*)	3,600		0 50		*a*1909	3 0	8 5	....	88 5	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....
		1,744	2 70	*h*1 89	30 0	*g*1912	2 3	20 1	....	77 6	.....	.....	.....	1 0	20 0	11 0	21 0	18 0	17 0	9 0	.....	.....
		14 414	1 42	*h*0 99	30 0	*g*1912	3 9	12 1	....	84 0	.....	.....	.....	.....	2 0	25 0	36 0	17 0	13 0	7 0	.....	.....
		2,900	.....	0 73	.....	*e*1915	.....	.....	.....	.....	.....	.....	.....	5 2	2 7	19 7	15 5	13 6	9 0	1 2	2 5	0.6
		3,525	.....	0 93	.....	*e*1916	.....	.....	.....	.....	.....	.....	.....	4 2	16 4	30 6	31 7	7 8	8 8	.....	0 5	.....
		3,906	.....	1 12	.....	*e*1917	.....	.....	.....	.....	.....	.....	.....	8 4	11 6	17 4	25 3	12 0	8 9	4 6	5 4	6.4
		*j*3,500	.....	1 00	.....	*e*1918	3 5	14.3	.....	82 2	0.5	2.7	.....	3 6	15 6	22 1	25 9	13 6	2 3	1 7	12 0	.....
		3 070	.....	1 29	.....	*e*1919	.....	.....	.....	.....	.....	.....	.....	11 7	11 8	19 4	25 2	15 0	7.5	1 2	5 2	.....
1-B	San Cayetano Mutual Water Co. (*a*)	452	.....	1 58	.....	1918	....	100 0	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS.—(*a*) From U. S. D. A. data collected by C. E. Tait. (*b*) Irrigation near Ventura. (*c*) Water used 4 months; quantity unknown. (*d*) May 1 to Aug. 15. (*e*) From An. Rpt. of company to State R. R. Comm. (*g*) From 4th Bien. Rpt., State Dept. of Eng. (*h*) From O. U. S. Bull. 254, U. S. D. A., by Frank Adams. Estimated from loss of 30 per cent. (*j*) Saticoy division. (*e*) Estimated. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct.
1-B	Santa Paula Water Works	1,628	1.89	*b*1.70	*b*10.0	*a*1912		100.0						11.0	19 0	20.0	16.0	13 0	11.0	10.0		
		1,325		1.47		*c*1914					4.1	1.4	4.4	9.5	11.5	12.7	12.0	12 6	10 0	7 8	7.0	7 0
		1,325		1.38		*c*1915					9.3	0.9	0.8	9.8	5 1	13.4	13.9	11.8	9.9	8.6	8.3	8.2
		1,325		1.33		*c*1916					0 6	0.3	5.3	12 4	18 0	16.3	18 1	11.9	10 5	0 8	2.1	3.7
		1,325		1 03		*c*1917					0.3	1.4	2.9	19.0	20 1	20.4	10 0	8 8	3.4	4 6	5.3	3.8
		1,325		1.35		*c*1918					3.8	1.9	0.0	7.4	20.3	20.0	17 0	7 8	9.0	8 8	4 0	
		1,325		0.89		*c*1919					2.1	8 7	15.9	24.4	9 6	6 7	6 8	5 2	5.2	3 0	3.2	9.2
		1,325		0 80		*c*1920					9.4	11.1	13.0	19 0	13 1	6.9	6.5	4 5	5.4	3.1	2.0	6.0
1-B	Santa Paula Water Co. (*d*)	200				1909		100.0			*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
1-B	Farmers' Irrigation Co.	4,200		1 50		*c*1919																
		4,200		1.76		1920					4.9	6.4	1.8		14.2	15.2	17.7	16.1	11.1	8.4	1.5	2.7
1-B	Thermal Belt Water Co.	5,000		.52		1909						8.2	11.0	10 2	10 1	7.2	11.7	11.1	4.1	2 6	10.7	13.0
		1,575		2.49		*d*1918		100.0														
1-B	Farmers' Ditch Co. (*d*)	7,590				1918	25.0	25.0	25.0	25.0												
1-B	Camulos Ditch (*e*) (*a*)	400	4.27	*b*3.42	*b*20.0	1912	37.5	62.5							11.0	27.0	22 0	16.0	15.0	9.0		
1-B	Hardgrave and Comfort Ditch (*e*) (*a*)	470	5.50	*b*4.12	*b*25.0	1912	24.5	0.1		75.4					18.0	26.0	17.0	9.0	9.0	21.0		
1-B	Stringtown and Carmiele Ditch (*e*) (*a*)	350	5 87	*b*4.70	*b*20.0	1912	100.0								4.0	13.0	27.0	20.0	19.0	17.0		
1-B	Hardison Ranch Co. (*e*) (*a*)	109	1.39	*b*1.33	*b*5.0	1912	1.8	84.4		13.8												
1-B	Turner Ditch (*e*) (*a*)	187	7.98	*b*5.59	*b*30.0	1912	6.4	72.7		20.9					10.0	26.0	26.0	18.0	14.0	6.0		
1-B	Atmore Ditch (*e*) (*a*)	150	4.65	*b*3.72	*b*20.0	1912	73.4	26 6														
1-B	Interurban Land and Water Co. (*e*)	*d*1,600		0.82		1909								*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
		*f*1,112	*f*1.34	*b*1 07	*b*20.0	*a*1912	31.5	66.1		2.4					19.0	19 0	20.0	20.0	14.0	8 0		
		*g*1,536	*g*2.32	*b*1.62	*b*30.0	*a*1912	13.0	83.7		3.3												
1-B	Pumping plants (*a*) (*e*)	2,471		0.55		1912		69.6		30.4												

REMARKS—(*a*) From 4th Biec. Rpt., State Dept. of Eng. (*b*) From O. E. S. Bull. 254, U. S. D. A. Estimated by Frank Adams. (*c*) From Rpt. of company to State R. R. Comm. (*d*) From U. S. D. A. data collected by C. E. Tait. (*e*) Irrigation in Santa Clara River Valley. (*f*) Carmiele Ditch. (*g*) River Street Ditch. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres	Feet.	Feet.	P ct		P ct.	P ct	P ct.	P.ct.	P.ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P.ct	P.ct	P ct
1-B	River Street Canal, Santa Clara River Valley (*a*)	1,536	2.30	.		1912	13 0	82 5	.....	4 5	....	....	....	.. .	19 0	23 0	13.0	21 0	21 0	3 0	....	
1-B	Walnut Irrigation Dist. (*b*)	850	.....	1.61	.. .	1909	23 0	77 0	.....	.....	....	....	....	....	16.6	16 8	16 8	16 6	16 6	16 6	....	....
1-B	Sespe Land and Water Co. (*a*) (*d*)	40	15 10	*e*12 08	20 0	1912	100 0	...	....	.....	....	....	....	....	....	16 0	47 0	16 0	12 0	9 0	....	.. .
1-B	Fillmore Irrigation Co	1,674	2 00	*e*1 70	*e*15 0	*a*1912	3 5	96 5	...	. .	...	....	....	....	13 0	25 0	20 0	14 0	14 0	14 0	....	.. .
		1,160		3 71	.	*e*1918	.....	99 0	.	1 0	....	...	*f*	....	.....	...	...	. .	...	.....	.....	.. .
1-B	Fillmore Water Co. (*e*)	1,200	.	3 50	. . .	1909	8 0	75 0	...	17 0	....	....	...	...	.....	...	...	.	. .	...	...	...
1-B	Southside Improvement Co.	1,400	0 76	*e*0 68	*e*10 0	*a*1912		100 0		.	.	.	.	.	13 0	20 0	22 0	18 0	15 0	12 0	.	.
		1,450		*f*2 23		*e*1918	. .	100 0		.	.	....	.	..	.....	...	...	. .	. .	...	.....	. .
1-B	Piru Water Co. (*d*)	*e*254	1 00	.	.	1909		100 0	..	.....	....	..	....	.	*x*	*x*	*x*	*x*	*x*	*x*	.	...
		376	3 77	*e*3 39	*e*10 0	*a*1912		100 0	...	. .	..	...	....	.	9 6	19 0	22 0	21 0	21 0	8 0	..	....
		*g*324	9 53	. .	..	1919	2 0	97 0	.	1 0	....	.	.	.	.	.	.	.	.	.	.	...
1-C	San Fernando Valley (*h*) (*i*)	61,600	.	1 31		1920	....	.	.	.....	..	.	.	.	.	.	.	.	..	.	.	
1-C	Montebello Land and Water Co. (*e*) (*k*)	1,000	.	2 25	.	1909	50 0	50 0	.	.	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.
		1,200	.	*j*0 99	.	1918	.	90 0	...	10 0	..	....	.	.	.	.	.	.	.	...	.	.
1-C	Haines Canyon Water Co. (*k*) (*m*)					1917								1 0	5 1	19 6	22 1	14 9	14 5	15 8	2 7	4 3
		*e*550		*e*0 61	.	1918		*e*54 5	..	*e*45 5	2 ..	1 7	0 1	5 7	13 7	15 8	17 9	15 8	10 5	10 4	3 ..	0 8
				.		1919		*e*54 5	.	*e*45 5	2 1	0 2	0 8	4 0	13 2	14 3	19 8	17 9	17 8	3 5	5 7	0 1
					.	1920		.	.	.	1 9	0 9	0 3	1 4	21 1	15 9	16 1	15 1	15 2	8 2	2 0	1 9
1-C	Carmel Water Co. (*e*) (*n*)	1,000		1 55	..	1909	12 5	75 0	.	12 5	..	. .	. .	...	*p*	*x*	*x*	*x*	*x*	*x*	*x*	
		1,000		0 90		1918	.	.	.	....	.	....	....	....								
1-C	Tujunga Water and Power Co. (*k*) (*e*)	1,000	...	1 00	.	1918	25 0	50 0		25 0	..			....	....							

REMARKS—(*a*) From 4th Bien. Rpt., State Dept. of Eng. (*b*) Citrus belt, San Gabriel River. (*c*) From U. S. Bull. 254, U. S. D. A., by Frank Adams. Estimated use. (*d*) Irrigation in Santa Clara River Valley. (*e*) From U. S. D. A. data collected by C. E. Tait. (*f*) On basis of 6 months irrigation. (*g*) River Street Ditch. (*h*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*i*) Irrigated from the Los Angeles River. (*j*) About 4.5 per cent domestic use. (*k*) San Fernando Valley. (*l*) About 13 per cent domestic use. (*m*) From An. Rpts. of company to State R. R. Comm. (*n*) Citrus belt of Los Angeles River. (*p*) Water used 7 months; quantity unknown. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P.ct.	P ct.	P.ct	P ct	P ct	P.ct	P ct	P ct	P ct	P.ct	P ct	P ct	P ct	P.ct
1-D	Ballona Irrigation Assn. (a) (b)	1,000		1 44		1909		100 0							x	x	x	x	x	x		
		1,000		1.30		1918					x	x	x	x	x	x	x	x	x	x	x	
1-D	La Rica Water Co. (a) (b)	120		1 74		1918	33 0			67 0	c											
1-D	Monte Vista Pipe Line Assn. (a) (d)	371		1 24				100 0						x	x	x	x	x	x	x		
1-E	Gardena Water Supply Co. (a) (b)	500		1 44		1918		4 0		96 0			e									
1-E	East Gardena Water Co. (a) (b)	300				1909									x	x	x	x	x	x		
		480		1.73		1918		10 5		89 5												
1-E	Moneta Water Co. (a) (b)	450		2 00		1909	50 0			50 0		k	x	x	x	x	x	x	x	x	x	
1-E	Torrance Water, Light and Power Co. (b) (f)	735		1 86		1918	10 2	2 0		87 8												
		275		0 50		1913								20 2	11 7	29 4	13 0	11 5	5 5	6 8	1 7	0 2
		425		0 60		1914					0 1	0 2	0 7		1 0	4 0	26 4	36 8	15 3	7 0	5 6	2 9
		400		0 60		1915					1 3		0 2	0 1	2 9	4 9	18 1	17 8	23 6	16 6	11 9	2 6
		250		0 50		1916					0 4				1 0	16 2	23 6	17 4	22 0	13 1	3 6	2 7
		250		1 00		1917					0 1			2 0	4 8	6 7	15.1	18 5	16.9	12 4	8 3	15 2
1-E	Bell Water Co. (a) (b)	100		1.30		1918				100 0												
1-F	Consolidated Water Co., Pasadena (a) (g) (h)	400		1 42		1918		1100 0														
1-F	Crown Water Co., Pasadena (a) (h)	12		5 00		1909									x	x	x	x	x	x		
		50		1 47		1919				1100 0												
1-F	Rubio Canyon Water and Land Assn. (h)	100		3 35		1909		100 0							18 0	18.0	16 0	16 0	16.0	16 0		
1-F	Sunny Slope Water Co. (a) (d)	700		1 08		1909		70 0		30 0					x	x	x	x	x	x		
		1,400		1 02		1918	1 8	73 2		25 0												

REMARKS—(a) From U. S. D. A. data collected by C. E. Tait. (b) Coastal Plain of Los Angeles County, Los Angeles River. (c) Water used 783 hours; monthly amounts unknown. (d) San Fernando Valley. (e) Water used for 6 months; monthly amounts unknown. (f) From An. Rpt. of company to State R. R. Comm. (g) Water from Precipice Canyon. (h) Citrus belt of San Gabriel River. (i) Citrus. (j) Truck and gardens. (k) San Fernando Valley. (x) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct
1-F	Calif.-Mich. Land and Water Co. (*a*) (*b*)	700	..	1 00		1918		..	..		...			.	...	...	...	...	...	..	...	...
1-G	Euclid Ave. Water Co. (*b*) (*e*)	150	..	1 68		1909	.	100 0	.		....	.	...		16 6	16 8	16 8	16 6	16 6	16 6		.
1-G	San Gabriel Valley Water Co. (*e*) (*d*)	415		1 90		1913	..		.	..	1 9	0 3	0 4	2 4	13 2	12 0	13 0	17 6	20 8	11 0	3 9	0 5
		415	..	1 64		1914	.		.		0 3	0 3	0 8	2 9	5 9	17 8	30 3	17 4	11 8	12 5	5 4	1 6
		415	.	1 57		1915	.		.				0 3	1 2	2 6	15 0	22 0	23 9	17 8	13 0	3 9	0 3
		415		1 48		1916	..		.		0 2	0 2	0 3	3 0	14 7	16 3	18 7	21 2	20 4	1 7	1 8	1 5
		645	.	0 92		1917	.	.	.		0 1	0 1	0 6	3 2	10 0	13 8	13 9	17 3	12 2	15 8	6 5	6 5
		670	.	0 91		1918		28 0	.	72 0	4 1	2 2	0 5	3 7	11 4	15 2	15 5	15 8	10 4	10 6	6 6	1 0
		832		0 90		1919	.		..		5 3	0 7	1 0	4 2	11 4	16 7	17 6	16 5	18 4	2 7	4 7	0 8
		910		1 11		1920		.			1 5	2 4	0 7	2 3	9 7	11 6	17 5	16 7	13 3	12 4	4 7	1 2
1-G	Garvey Water Co. (*b*) (*e*)	315		0 68		1919		95 3		4 7												
1-G	California Domestic Water Co. (*e*)	10,000	2 17			*c*1909		100 0														
		3,000		1 57		*b*1918		100 0						.								
1-H	Cate Ditch Co. (*f*)	13,300			21 0	*b*1909	23 0	77 0	.					13 3	13 5	16 6	16 6	15 0	13 3	11 7		
						*g*1913									15 2	15 6	17 2	20 5	21 1	8 7	1 7	
		1,350		2 40		*b*1918	22 1	77 9														
1-H	Standefer Water Co. (*e*)	1,375		1 86		*b*1909	40 0	60 0							21 0	19 1	19 4	16 4	13 4	13 4		
						*g*1913								4	9 7	17 3	21 7	18 4	15 8	10 6	6 8	
		1,268		1 60		*b*1918		100 0														
1-H	Los Nietos Irrigation Co. (*f*)					*g*1913									12 7	16 2	24 3	19 4	12 4	11 6	3 4	
		1,500		2 00		*b*1918	10 7	87 3		2 0												
		*b*1,298		2 77	5 0		16 0	84 0							19 0	17 8	15 8	15 8	15 8	15 8		
1-H	Whittier Water Co. (*d*) (*f*)	2,500		0 71		1915					0 2		0 6	3 1	6 3	16 4	19 7	18 1	16 9	11 4	6 2	1 1
		4,400		0 59		1916					0 5	0 3	0 3	6 7	20 6	15 4	16 7	16 8	13 2	4 5	6 1	2 1
		4,400		0 97		1917	.	...			0 2	0 1	0 7	5 6	15 1	15 1	15 9	14 1	10 2	9 3	6 4	6 3
		4,400	.	0 69		1918					4 8	3 3	0 1	1 2	11 6	16 7	18 6	15 7	10 8	9 3	4 5	0 4
		4,500	.....	0 79		1919					2 2	0 5	1 6	7 1	16 3	16 3	14 1	19 4	10 9	3 1	6 1	1 8
		4,500	.....	0 96		1920		.....			5 1	3 3	0 5	2 0	10 9	20 0	13 9	15 1	10 9	9 6	3 7	5 0

REMARKS.—(*a*) Coastal Plain of Los Angeles County, Los Angeles River. (*b*) From U. S. D. A. data collected by C. E. Tait. (*c*) Citrus belt of San Gabriel River. (*d*) From An. Rpts. of company to State R. R. Comm. (*e*) From 8th Bien. Rpt., State Dept. of Eng. (*f*) Coastal Plain of Los Angeles County, San Gabriel River. (*g*) From measurements by F. C. Finkle, Los Angeles.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P et.		P et.	P.ct.	P ct.	P ct.	P.et	P.et	P.et.	P et.	P.ct	P.ct	P.ct	P ct	P.ct.	P.ct.	P ct.	P.ct
1-H	Banta Ditch Assn. (*a*) (*b*)	1,000		1.00		1918		100 0														
1-H	Rincon Ditch Co. (*a*) (*b*)	900		1.56		1909									*x*	*x*	*x*	*x*	*x*	*x*		
		901		1.50		1918		90 0		10 0												
1-H	Whittier Extension Mutual Water Co. (*a*) (*b*)	2,000		1.50		1918		100 0														
1-H	San Gabriel River (*d*)			2.50						*c*100 0												
1-H	Valley View Water Co. (*a*) (*e*)	80		3.20		1909									16 6	16 8	16 8	16 6	16 6	16.6		
1-H	Boulevard Water Co. (*a*) (*e*)	300				1918	16 7	58 3	25 0					*f*								
1-H	Mission View Acres (*a*) (*e*)	200		1.20		1909				100 0				*x*	*x*	*x*	*x*	*x*	*x*	*x*		
1-H	Fruitland Water Co. (*a*) (*e*)	125		0 96		1909				100 0					*x*	*x*	*x*	*x*	*x*	*x*		
1-H	Arroyo Ditch and Water Co. (*a*) (*b*)	4,000		1 98	10 0	1909	50 0	50 0							20.4	20.4	16.6	15 4	13 6	13.6		
		4,000		2 00		1918	37 5	62 5														
1-H	San Antonio Irrigation Co. (*a*) (*b*)	1,500		0 60		1909									*x*	*x*	*x*	*x*	*x*	*x*		
		1,200		2 00		1918	66.7			33.3												
1-I	Puente Land and Water Co. (*a*) (*e*)	1,000		1.20		1918	20 0	74 0		6 0												
1-I	Little Lake Ditch (*g*) (*e*)					1913									24.2	37 6	4.0	11 6	1 3	9.3	12 0	
1-J	Baldwin Park Water Co. (*a*) (*e*)	269		1 02		1918		61 7		38 3												
1-J	Columbia Land and Water Co. (*e*)	600		0.78		1919		100 0							*x*	*x*	*x*	*x*	*x*	*x*		
1-J	Covina Irrigation Co. (*a*) (*e*)			0 62		1911					2 6			2 5	16.5	16 5	14 5	11 5	9 5	9.2	8.3	8.9
		5,000		0 65		1912					3 9	6 6	1 4	7 9	16.0	14.6	10 6	9 0	7 9	7 8	6.9	7.2
		5,000		0.58		1913					3 8	1.5	3.2	16 0	17.0	9 8	10 5	10 8	10 7	10.7	3 8	4.2
		4,500		1.30		1918		100 0														

REMARKS—(*a*) From U. S. D. A. data collected by C. E. Tait. (*b*) Coastal Plains of Los Angeles County, San Gabriel River. (*c*) Strawberries. (*d*) From T. D. Allin, Pasadena. (*e*) Citrus belt of San Gabriel River. (*f*) Water used 7 months; quantity unknown. (*g*) From measurements by F. C. Finkle, Los Angeles. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P.ct.	P ct.	P ct.	P.ct.	P.ct	P ct	P ct	P ct	P.ct	P ct	P ct	P ct	P ct	P.ct	P ct
1-J	Lands near Covina (*a*). .		1 48					100 0			2 7			2 7	16 2	16 3	14 9	11 5	9 4	9 4	8 1	8 8
			1 70	.	.		. . . .	100 0	. .		3 5	5 9	1 2	14 7	14 7	13 5	10 0	8 2	8 2	7 1	6 5	6 5
		.	1 39				. .	100 0	. .	.	4 2	2 2	3 6	16 6	17 3	8 6	10 1	10 8	10 8	10 8	3 6	1 4
1-K	Duarte Mutual Irrigation and Canal Co. (*b*) (*c*) . . .	1,259	. .	1 20		1918	100 0				. .	. .	.		.							
1-K	Beardslee Water Ditch Co. (*b*) (*c*)	400	. .	0 90		1909	6 0	86 5		7 5	. .	.			4 8	1 8	33 5	22 4	17 3	17 2		
		1,110	.	0 70	.	1918	2 2	73 0		24 8	.	.		. . .	*d*						.	
1-K	Walnut Grove Mutual Water Co. (*c*)	781	. .	2 34	.	*b*1918	33 3	33 4		33 3	.	.	.	. . . .								
		789	. . .	1 01	.	.		50 0	.	50 0		.		. .	16 8	16 8	16 6	6 4	16 0	16 6		
1-K	Azusa Irrigation Co. (*b*) (*c*)	5,508		0 70		1908																
		3,929		2 00		*c*1918		100 0			3 0	3 0	4 4	6 6	8 8	11 0	13 0	13 0	13 0	11 0	8 8	4 4
1-K	Glendora Irrigation Co. (*b*) (*c*)	1 152	.	1 35		1909		100 0	. .			.			19 2	19 2	15 4	15 4	15 4	15 4		
		1,000		1 41		1918		100 0		.					.			. .	. . .	.		
1-K	Glendora Mutual Water Co. (*b*) (*c*)	1,000		1 36		1918		100 0	.	.	.	.	.	.	.				. . .	. . .	.	
1-L	San Dimas Water Co. (*c*)		. .	2 50	.	*e*1917	.	*f*100 0				. . .	. . .	. . .						. . .		
		2,200	. . .	1 67		*b*1918	. .	100 0	.	. .	. .	. .	. . .	. . .	*h*				. .	. . .	.	
1-L	La Verne Irrigation Co. (*b*) (*c*)	200		1 80	.	1909		100 0		. .	. .		. .	. .	16 6	16 6	16 8	16 8	16 6	16 6		
		185	.	2 16		1918		100 0		.	. .	.	. .	. .				. . .	. .	. .		
1-L	Claremont Co-operative Water Co. (*g*).	300	. . .	2 16	.	1909	. .	100 0			. .		. .	. .	16 6	16 8	16 8	16 6	16 6	16 6	. . .	
		400	. . .	2 71	. .	*b*1918	. .	100 0	.	. .	. .	. .	. .	. .	.	.	.	. .	. .	. .	. . .	
1-L	La Verne Land and Water Co. (*b*) (*c*)	4,000		1 44		1909	. .	100 0			. .	. .	.		16 6	16 8	16 8	16 6	16 6	16 6	. .	
		300	.	1 67	. .	1918						.						. .				
		300	. . .	*j*1 81		1919		100 0	. .		. .			. .	*h*			. .	. .	.		

REMARKS—(*a*) From rpt. of B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco, to City of San Francisco. (*b*) From U. S. D. A. data collected by C. E. Tait. (*c*) Citrus belt, San Gabriel River. (*d*) Water used from 6 to 8 months; monthly amounts unknown. (*e*) From H. J. Gilman, Pres. of Co., San Dimas. (*f*) Citrus. (*g*) Citrus belt, Santa Ana River. (*h*) Water used 7 months; monthly amounts unknown. (*i*) Coastal Plain of Santa Ana River. (*j*) Average 1918-1919.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
1-M	Irrigation Co. of Pomona (*a*) (*c*)	2,000		0 82		1918		95 0		5 0				14 0	14 0	15 0	15 0	14 0	14 0	14 0		
		2,500		0 80		1919	30 0	70 0														
1-M	Del Monte Irrigation Co. (*a*)	2,000		0 73		*b*1906		100 0														
		2,000		1 10		*b*1907		100 0														
		2,000		0 73		*b*1908		100 0														
		2,000		0 73		*b*1909		100 0														
		1,800		1 66		*c*1918		100 0														
1-M	Palomares Irrigation Co. (*a*)	600		0 71		*b*1906		100 0														
		600		0 83		*b*1907		100 0														
		600		0 83		*b*1908		100 0														
		500		0 86		*c*1909		100 0							16 6	16 8	16 8	16 6	16 6	16 6		
		350		1 31		*c*1918		100 0							*x*	*x*	*x*	*x*	*x*	*x*	*x*	
1-M	Pomona Irrigation Co. (*a*) (*d*)	2,500		0 39		1906		*e*100 0														
		2,500		0 44		1907		*e*100 0														
		2,500		0 51		1908		*e*100 0														
		2,500		0 48		1909		*e*100 0														
1-M	Farms near Pomona (*a*)	319		0 80		*d*1905		100 0														
		*f*287		2 30		*d*1905	100 0															
		*g*192		1 40		*d*1905	100 0															
		*h*218		2 40		*d*1908	100 0															
1-M	Pomona Ranch Water Co.	90		4.00				100 0							16 6	16 8	16 8	16 6	16 6	16 6		
1-M	Canyon Water Co. (*a*) (*c*)	2,500		0 86		1909		100 0							17 4	17 4	17 4	17 4	16 7	13 7		
		2,500		1 00		1918		100 0														
1-M	Chino Water Co. (*a*) (*c*)	1,000		0.72		1918		100 0							*j*							

REMARKS—(*a*) Citrus belt, Santa Ana River. (*b*) From O. E. S. Bull. 236, U. S. D. A. (*c*) From U. S. D. A. data collected by C. E. Tait. (*d*) From 4th Bien. Rpt., State Dept. of Eng. (*e*) Contains 50 per cent citrus and 50 per cent deciduous fruit. (*f*) 7 farms. (*g*) 8 farms. (*h*) 6 farms. (*i*) U. S. D. A. Irrigation Investigations. (*j*) Water used 7 months; monthly amounts unknown. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
I-M	San Antonio Water Co. (*a*) (*e*)	66,000	. .	*d*1 60		1913	. .	. . . . .			7 0	2 0	3 3	9 7	11 8	14 5	11 3	11 5	11 1	11 4	6 6	2 8
		6,000		*d*1 60		1914	. .	. . .					4 8	9 5	10 5	12 2	12 5	12 4	12 4	12 3	11 5	1 7
		6,000	. .	*d*1 60		1915	. .				1 5		4 4	5 8	6 0	13 1	13 1	13 1	12 9	13 1	13 1	3 9
		5,000		*c*4 20		1918	. .	100 0			*f*	.	.	.	.	.	.	.	.	.	.	.
		200	.	2 28		*c*	. .	100 0	. .		.	.	.	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.
I-M	Monte Vista Irrigation Co. (*c*) (*g*)	950		0 82		1918	.	100 0					.		.							.
		950		0 82		1919					.		.									.
I-N	Alta Loma Mutual Water Co. (*c*) (*g*)	120		1 68		1918		100 0			.			.	. .							.
I-N	Jamosa Water Co.	500		2 02		1918		100 0							*x*	*x*	*x*	*x*	*x*	*x*	*x*	
I-N	Old Settlers' Water Co. (*c*) (*g*)	280		1 90		1918	.	100 0					*k*		. .		.		.	. .		
I-N	Sunset Water Co. of Cucamonga (*c*) (*g*)	175		1 07		1918	.	100 0				*x*		*x*	*x*	*x*	*x*	*x*	*x*	*x*		
I-N	Cucamonga Water Co. (*c*) (*g*)	3,000		0 85		1918		100 0							*f*							
I-N	Etiwanda Water Co. (*c*) (*g*)	2,000		*d*1 20		1918		40 0		60 0					*x*	*x*	*x*	*x*				
I-N	Fontana Development Co. (*g*)	15,000	1 31			*k*1912	5 4	85 0		9 6	7 0	8 0	12 0	8 0	13 0	11 0	9 0	7 0	6 0	6 0	6 0	6 0
		3,820		1 88		*c*1918		100 0			*l x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
I-N	Del Rosa Water Co. (*c*) (*g*)	585		1 00		1918		100 0														
I-O	Marygold Mutual Water Co. (*c*) (*g*)	700		0 64	50 0	1918		85 7		14 3					*x*	*x*	*x*	*x*	*x*	*x*		
I-O	Citizens Land and Water Co. (*c*) (*g*)		1 54	1 15	. .	1917								12 5	13 4	14 8	15 7	15 0	14 8	15 8		
		1,000	1 21	1 12	.	1918	0 6	98 2		1 2				7 7	16 3	16 1	17 5	16 8	16 1	9 5		
I-O	Terrace Water Co. (*c*) (*g*)	300	. . .	2 33	. . . .	1918	3 0	97 0				*m*										

REMARKS.—(*a*) Coastal Plain of Santa Ana River. (*b*) Exact acreage not kept by company. (*c*) From U. S. D. A. data collected by C. E. Tait. (*d*) Based on average season of 8 months; includes domestic use. (*e*) First right with ample water. (*f*) Water used 7 months; monthly amount unknown. (*g*) Citrus belt, Santa Ana River. (*h*) About 5½ months; monthly amounts unknown. (*i*) Water used during 199 days; monthly amounts unknown. (*j*) Averages for 10 years. (*k*) From 4th Bien. Rpt., State Dept. of Eng. (*l*) Eighty per cent of the water is used between April 1 and October 31. (*m*) Water used for 6 months, distribution unknown. (*x*) Water used, quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct	P.ct.	P.ct	P.ct	P.ct.	P.ct	P.ct	P.ct.	P.ct	P.ct.
1-O	Mount Vernon Water Co. (*a*) (*b*)	350	.....	2 49	.....	1918	11 4	88.6	.....	.....	.....	.....	*cx*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
1-O	North Fork Water Co. (*a*) (*b*) (*d*)	1,800	...	2 23	.....	1918	.....	100 0	.....	.....	.....	.....	.....	.....	.....	16.2	19.3	19 3	17.7	14 5	13.0	.....
1-O	Lytle Creek Water and Improvement Co. (*a*) (*b*)	3,000	.....	e2 64	2.5	1918	.....	93.3	.....	6.7	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....
1-O	City Creek Water Co. (*a*)	320	2 11	...		*f*1912	.....	100.0	.....	.....	.....	.....	.....	.....	36.0	29 0	17.0	10 0	8 0	.....	.....	.....
		380	2 80	2 40		*b*1918	...	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1-P	Bear Valley Mutual Water Co. (*a*)	15,000	2 00	.....		*f*1912	...	100 0	.....	.	7 0	5.0	....	7 0	10 0	13 0	14 0	13 0	12 0	12 0	7 0	....
		.....	1 32	...		*g*1914	.....	.....	.....	.....	.....	.....	.....	.....	16 6	16 7	16 7	16 7	16 7	16 6	1 0	...
		4,625	.	2 00		*b*1918	.....	100.0	.....	.....	.....	.....	.....	.....	12 0	14 0	14.0	14 0	14 0	12 3	10 7	9 0
1-P	Lugonia Water Co. (*a*) (*b*)	2,800	.	1 20	...	1918	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
1-P	South Mountain Water Co. (*a*) (*b*)	500	...	2 08	....	1918	.....	100.0	.....	.....	*hx*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
1-P	Mentone Irrigating Co. (*a*) (*b*)	400	...	1 80	.. ...	1918	.....	100.0	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
1-Q	Gage Canal (*a*)	6,996	....	2.24	.	*i*1899	.....	.....	.....	.....	3 6	5 4	8 0	9 8	10.7	9 8	9 8	9 8	9 4	8 5	7 1	8 1
		7,501	....	2.23	....	*i*1900	.....	.....	.....	.....	4 7	8 4	9 3	8.8	8 8	9 4	10 3	10 5	10.3	10 5	6 1	2 9
		7,501	....	2 00	....	*i*1901	.....	.....	.....	.....	3 4	1 7	7.2	11 0	11 6	11 0	10 6	11 9	11.2	10 5	5 0	4 9
		.....	.....	.....	.....	1910	.....	.....	.....	.....	*b*0 5	5.5	8.7	4 5	11 2	11 0	11 1	11 0	10.6	10.5	9 2	6 2
		.....	.....	.....	.....	1911	.....	.....	.....	.....	*b*4 7	.....	.....	7 1	11.9	11 6	12 0	11 8	11 4	10 0	9 2	10.3
		9,040	1 83	.....	....	*f*1912	.....	100 0	.....	.....	*b*8 1	9 9	1 5	0.6	8 5	11.1	11.0	10 5	10 0	9 5	9 5	9.5
		.....	.....	.....	.....	1913	.....	.....	.....	.....	*b*6 5	2 2	1 0	10 6	12 7	12 1	12.5	11 0	10 7	10 6	5 2	4 9
		.....	.....	.....	.....	1914	.....	.....	.....	.....	*b*1 2	0 7	2 5	9 2	10 8	12.5	13.6	13.7	12 6	11.0	9 6	2.5
		6,144	...	2 21	.....	1918	.....	100 0	.....	.....	*b*1 1	0 5	6 5	15 8	12 6	17 0	16 7	15 4	14 4	.....	.....	.....
1-Q	West Riverside Canal Co. (*a*) (*k*)	*j*7,000	.....	1.70	.....	1917	.....	.....	.....	.....	.....	0.3	2.5	10 5	10 9	12 7	13.5	12 5	11 9	9 1	8 5	7.6
		*j*7,000	.....	1 70	.....	1918	.....	.....	.....	.....	7.8	2 6	.....	7 1	13 7	13 1	14 2	13.3	12 0	18 3	6 6	1.3
		*j*7,000	...	1 80	.....	1919	.....	.....	.....	.....	7 7	0 4	....	9 1	11 3	12.9	13.9	13.5	12 5	8 9	7 2	2 6

Continued on next page.

REMARKS—(*a*) Citrus belt, Santa Ana River. (*b*) From U. S. D. A. data collected by C. E. Tait. (*c*) Seventy-two per cent of water used in five months, Apr. to Aug., inclusive. (*d*) By contract with Bear Valley Mutual Water Co. (*e*) First right with ample water. (*f*) From 4th Bien. Rpt., State Dept. of Eng. (*g*) Average for 5 years, 1910-1914, inc. (*h*) Seventy-seven per cent of water used in 214 days, 23 per cent in remaining 151 days. (*i*) From U. S. Bulletins Nos. 86, 104 and 119, U. S. D. A. (*j*) Estimated by company. (*k*) An. Rpts. of company to State R. R. Comm. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P.ct		P. ct.	P.ct.	P. ct.	P. ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct
	Continued from page 126.																					
1-Q	West Riverside Canal Co. (*a*)	*b*7,000		1 60		*c*1920	. .	. .		. .	5 0	1 6	. .	5 4	12 9	14 3	14.2	11 8	13 5	8 5	4 7	5 1
1-Q	Riverside Water Co. (*a*)	*z*6,000	.		. .	*d*1894	. .	. .	. .	. .	2 5	2 3	5*0	13 2	10 6	12 8	13 0	13 0	10 9	7 1	4 3	5.3
		. .	. .			*d*1895	. .	. .	. .	. .	0 1	0 1	0 9	3 0	16 1	15 1	16 0	16 2	12 7	8 8	3 7	7.0
		. .	. .			*d*1896	. .	. .	. .	. .	3 5	6 7	0 3	7 1	15 0	14 0	15 1	11 4	12 1	10 1	6 2	1 2
		. .	. .			*d*1897	. .	. .	. .	. .	1 7	. .	0 2	11 2	12 1	19 2	12 2	14 2	11.3	3 6	5 4	8 9
		. .	. .			*d*1898	. .	. .	. .	. .	2 5	7 8	4 6	12 2	13 0	12 4	10 7	10 9	11 3	5 1	5 2	4 3
		. .	. .			*d*1899	. .	. .	. .	. .	1 4	7 3	8 7	11 1	12 5	10 1	11 8	12 0	10 9	5 2	2 8	5 9
		. .	. .			*d*1900	. .	. .	. .	. .	6 8	7 0	9 7	10 8	9 2	11 8	10 5	11 5	10 8	7 1	2 8	1 7
		. .	. .			*d*1901	. .	. .	. .	. .	2 5	. .	9 0	13 8	12 1	11 9	11 4	11 0	10.4	9 0	2 0	6 6
		. .	. .			*d*1902	. .	. .	. .	. .	1 0	2 5	0 7	9 1	14 3	12 3	12 1	11 9	11 4	10 7	5 2	5.8
		. .	. .			*d*1903	. .	. .	. .	. .	6 9	0 7	9 2	3 6	10 5	11 2	9 7	9 8	9 2	9 8	8 4	11 0
		. .	. .			*d*1904	. .	. .	. .	. .	8 9	8 6	5 3	7 3	9 6	9 6	9 6	9 6	9 5	7 1	7 2	7 7
		*z*9,585	1 75			*d*1905	. .	. .	. .	. .	2 6	. .	0 5	10 3	14 5	13 1	13 7	13.7	11 9	8 9	4 1	6 7
		. .	. .			*d*1906	. .	. .	. .	. .	4 9	1 1	1 2	9 1	14 3	13 4	13 1	12 5	10 3	10 5	8 9	9 7
		. .	. .			*d*1907	. .	. .	. .	. .	0 6	0 1	0 2	8 8	14 8	14 3	15 0	12 5	13 2	6 6	4 8	9 7
		*z*9,050	2 42			*d*1908	. .	. .	. .	. .	2 8	0 3	5 9	12 7	12 3	11 0	12 8	10 3	9 6	6 2	8 3	7 8
		. .	. .			*d*1909	. .	. .	. .	. .	3 4	. . .	2 0	11 3	13 1	13 0	12 6	10 5	11 0	9 3	9 0	4 5
		. .	. .			*d*1910	. .	. .	. .	. .	0 1	4 8	9 7	8 0	12 1	11 1	11 4	8 8	9 2	8 6	8 2	8 0
		. .	. .			*d*1911	. .	. .	. .	. .	4 4	. .	0 6	9 0	12 2	12 0	12 0	10 8	10 3	9 2	9 0	10 5
		*z*9,000	2 90			*d*1912	. .	. .	. .	. .	7 8	7 0	1 8	3 5	9 7	10 7	10 7	10 3	9 8	8 6	9 0	11 1
		. .	. .			*d*1913	. .	. .	. .	. .	8 3	0 8	5 3	12 5	12 2	10 7	11 3	9 6	10 2	9 8	5 6	4 1
		. .	. .			*d*1914	. .	. .	. .	. .	0 6	. .	5 4	13 1	8 6	13 7	11 7	12 6	11 9	9 8	7 7	1 6
		. .	2 30			*d*1915	. .	. .	. .	. .	0 5	. .	2 2	13 7	5 6	15 8	15 1	13 0	12 4	11 8	6 5	3 4
		7,580	*e*3 35	2 91	*e*15 0	*f*1908	. .	. .	. .	. .	2 8	0 5	5 9	12 5	12 2	11 0	12 8	9 9	9 6	6 7	8 3	7 8
		7,660	*e*3 36	2 92	*e*15 0	*f*1909	. .	. .	. .	. .	3 5	. .	2 0	11 3	13 1	13 0	12 8	9 9	11 0	9 5	9 0	4.6
		7,740	*e*3 91	3 43	*e*15 0	*f*1910	. .	. .	. .	. .	0.2	4 8	9 7	8 0	12 0	10 9	11 3	8 3	9 2	8 5	9.1	8 0
		7,820	*e*3 54	3 08	*e*15 0	*f*1911	. .	. .	. .	. .	4 2	. .	0 6	9 3	12 2	11 9	11 9	10 8	10 2	9 2	9.2	10 5
		7,900	*e*3 75	3 26	*e*15 0	*f*1912	. .	. .	. .	. .	7 8	6 8	1 8	3 5	9 7	10 7	10 7	10.3	9 9	8 7	9 0	11 1
		7,978	*e*3 41	2 96	*e*15 0	*f*1913	28 4	45 3	19 6	6 7	8 2	0 6	5 7	12 4	12 0	10 6	11 2	9 6	10 1	9 9	5 3	4 4
		7,359	*e*2 99	2 60	*e*15.0	*f*1914	36 6	40 6	16 1	6 7	0 6	. .	4 8	13 5	8 7	13.8	11 7	12 7	11 9	9 9	7 8	1.6
		8,111	. .	2 72		*d*1918	31 2	26 2		42 6	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
	Continued on next page.		2 95	. .	.	*g*1913	. .	. .	. .	. .	8 2	0 7	5 3	12 5	12 1	10 7	11 3	9 7	10 2	9 9	5 1	4 3

TABLE 8.

REMARKS—(*a*) Citrus belt, Santa Ana River. (*b*) Estimated by company. (*c*) From An. Rpts. of company to State R. R. Comm. (*d*) From U. S. D. A. data collected by C. E. Tait. (*e*) Gross use computed from net for an estimated loss of 15 per cent. (*f*) From transcript in appeal to the Supreme Court of the State of California, City of San Bernardino vs. City of Riverside and Riverside Water Co. (*g*) From rpt. by B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco, to City of San Francisco. (*z*) In average years irrigation in Jan. and Feb. is unnecessary. The delivered water as reported includes domestic use.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct		P ct.	P.ct.	P.ct.	P ct.	P.ct.	P.ct	P ct	P.ct.	P ct	P ct	P ct	P.ct	P ct	P ct	P.ct.	P ct
	Continued from page 127.																					
1-Q	Riverside Water Co. (*a*)		2 39			1914					0 5		5 4	13 4	8 6	13 8	14 8	12 6	11 9	9 8	7 7	1.5
			2 54			1915					0 5	0 2	2 4	14 3	5 7	16.5	15 5	13 5	12.5	12 5	6.8	
1-Q	Riverside Highland Water Co. (*b*) (*c*)	2,350		*d*2 00		1918		100 0														
1-Q	Rivino Water Co. (*b*) (*c*)	809		1 99		1918		100 0														
1-R	Yorba Linda Water Co. (*b*) (*c*)	2,500		1 08		*c*1918		100.0				*e*										
1-R	Temescal Water Co. (*b*) (*c*)					*z*1906								5 4	12 5	13 8	14 3	14 2	13 9	13.9	12 0	
						*z*1907								10 0	15.3	13.5	14 7	14 6	14 6	10 5	6 8	
						*z*1908								12 0	12.7	12 9	13 0	13 2	13.2	11 4	11 6	
		4,682		*f*2 04		*z*1913					7 9		4 9	10 8	10 9	9 8	9 4	9 3	10 0	10 0	8 6	8 4
		4,682		*f*2 00		*z*1914							5 0	10 1	11 4	11 4	11.9	12 3	11 3	11 6	11.4	3.7
		4,682		*f*1 85		*z*1915							3 2	12 8	8 7	12 4	12 6	12 9	12.9	13 6	8.4	2 3
		4,682		2 04		1918		100 0				*g*										
1-S	Santa Ana Valley Irrigation Co. (*b*)	17,000	1 91			*h*1912		92 0		8 0	10.0	15 0	16 0	16 0	11 0	7 0	5.0	4 0	4 0	4 0	4 0	4 0
		17,428		1.35		*c*1918		86.0		14 0												
1-S	Twelve systems in Santa Ana Valley (*b*) (*h*)	7,717	2 85			1912	18 1	59 8		22 1												
1-S	Serrano Water Assn. (*c*) (*i*)	947		1 71		1918		60 7		39 3												
1-S	J. T. Carpenter Water Co. (*b*) (*c*)	1,000		1 92		1918		97.0		3 0												
1-S	Anaheim Union Water Co. (*i*)	13,000	2.07			*h*1912		76.2		23 8	13 0	12 0	13 0	12.0	12 0	7 0	6.0	5 0	5.0	5 0	5.0	5.0
						*c*1913					6 3	1 9	3 3	14 0	11 5	12 2	9 5	10 1	11 3	10 8	2.6	6 6
		8,000		1 61		*c*1918		100 0			6 0	6 0		11 0	18.0	11 0	11 0	12.0	9.0	9 0	*5.0	2 0
1-T	Hermosa Water Co. (*j*) (*c*)	480		1 51		1918		100.0					*k*									

Remarks—(*a*) From rpt. by B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco, to City of San Francisco. (*b*) Citrus belt, Santa Ana River. (*c*) From U. S. D. A. data collected by C. E Tait. (*d*) First right with ample water. (*e*) Water used 6 months; monthly amounts unknown. (*f*) Irrigation only; domestic use deducted. (*g*) Water used for 290 days; monthly amounts unknown. (*h*) From 4th Bien. Rpt., State Dept. of Eng. (*i*) Coastal Plains, Santa Ana River. (*j*) Coastal Plains of Los Angeles County. (*k*) Water used 7 months; monthly amounts unknown. (*x*) These crops irrigated; area unknown. (*z*) In average years irrigation unnecessary in Jan. and Feb. The delivered water as reported includes domestic use.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P ct.	P.ct.	P.ct.	P ct.	P.ct	P ct	P.ct	P ct.	P.ct.	P ct	P ct.	P ct.	P ct.	P.ct.	P.ct.	P.ct.
1-U	Capistrano Water Co. (*a*) (*c*)	400		*c*3 24		1918	3 7	93 8	.	2 5					*x*	*x*	*x*	*x*	*x*	*x*		
1-U	Trabuco Water Co. (*a*) (*c*)	404		1 51		1918	.	84 3	.	15.7					*x*	*x*	*x*	*x*	*x*	*x*		
1-U	Oceanside Mutual Water Co. (*d*)	65		0 86		*b*1916				100 0												
		10		1 10		*c*1917				100 0												
		117		1 21		*c*1918	.	8 5		91 5	4 7			7 3	17 8	11 5	7.5	11.0	17.5	10.7	7 6	4 4
		69		0 76		*c*1919	.			100 0												
2-A	Yucaipa Water Co. No. 1 (*f*)	2,038		0 31		*c*1915		100 0														
		2,051		0 53		*c*1916		100 0														
		3,500	3 60			1916																
		2,051		0 53		*b*1918		100 0														
2-B	Beaumont Irrigation Dist. (*g*) (*e*)	2,120	*h*0 44	0 32	27 9	1918	.	95 1		4 9					15 6	21 9	25 0	21 9	15 6			
		2,135	*h*0 47	0 37	21 8	1919		95 1		4 9				2 2	16 9	23.2	19 2	18 9	14 7	4 9		
2-B	Cabezon Water Co. (*b*) (*m*)	*n*500		2.10		1919		*n*100.0														
2-B	Banning Heights Mutual Water Co. (*b*) (*g*)	2,400		1 03		1918	.	100 0				*i*										
2-B	Banning Water Co. (*b*) (*g*)			1 94		1916	.		.													
				1 96		1917			.			*j*										
				2 28		1918																
		2,850		1 90		1919		100 0						15 5	18 5	14 5	14 5	10 5	10.0	9 5	7 0	
2-C	Fruitvale Water Co., San Jacinto (*k*)	1,676		2 03		1913	*l*	.														
		1,676		1 53		1914	*l*															
		1,656		1 39		1915	*l*															
		1,676		1 55		1916	*l*															
		2,904		1 57		1917	*l*															
		3,015		1 55		1918	*l*	.														
		2,828		1 62		1919	*l*															
		2,915		2 02		1920	*l*	.														

REMARKS—(*a*) San Juan Creek. (*b*) From U. S. D. A. collected by C. E. Tait. (*c*) On basis of 180 days. (*d*) San Luis Rey River. (*e*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*f*) Citrus belt, Santa Ana River. (*g*) Deciduous belt. (*h*) This use is high because of abundant rainfall and small tract irrigation. (*i*) Water used 6 months; monthly amounts unknown. (*j*) Water used 7 months; monthly amounts unknown. (*k*) From company data by A. L. Sonderegger, Los Angeles. (*l*) Crop mostly alfalfa. (*m*) Irrigation water from Millard Canyon. (*n*) From measurements by F. C. Finkle, Los Angeles. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines.	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P ct.	P.ct.	P ct.	P.ct	P.ct	P ct	P ct.	P.ct	P.ct.	P ct.	P ct	P.ct.	P.ct	P ct.	P ct.
2-C	Lake Hemet Water Co. (*a*)	572	.....	1 25	..	*b*1909	....	96 5	....	3 5	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		610	.....	1 41	..	*b*1910	....	95 1	1 6	3 3	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		620	.....	1 26	...	*b*1911	....	95 2	1 6	3 2	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		675	.....	1.14	..	*b*1912	....	95 5	1 5	3 0	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		710	.....	1 16	..	*b*1913	....	93 7	1 4	4.9	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		683	.....	1 11	..	*b*1914	....	95 6	1 5	2 9	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		5,895	.....	0.99	..	*c*1913	.....	.....	.....	.....	0.5	0 4	0 8	10 2	14 1	13.6	13 7	14 4	13 4	13.5	5.1	0.3
		5,911	.....	0 92	..	*c*1914	.....	.....	.....	.....	...	0 1	2 4	8 9	9.0	14 0	14 9	14 8	14 3	15 8	5 8	....
		5,554	.....	1 01	....	*c*1915	.....	.....	.....	.....	0 1	....	0 4	9 4	8 7	15 2	14.5	15 4	15 0	13 7	7 5	0.1
		5,600	.....	0 96	.....	*c*1916	.....	.....	.....	.....	....	....	0 1	6 2	16 1	15 7	14 9	16 5	15 5	4.2	10 6	0 2
		6,000	.....	0 98	.....	*c*1917	.....	.....	.....	.....	...	....	0 9	6 0	14 5	17.2	15.4	16 1	12.8	9.7	3.0	4 4
		6,000	.....	1.01	..	*c*1918	.....	.....	.....	.....	1 2	....	0 1	3 2	18 2	18 3	17.8	16.9	13.2	5.9	5 0	0.2
		6,000	..	1 11	.	*c*1919	.....	.....	.....	.....	1 6	0.3	1 1	10 9	18 7	16 7	13 0	14 6	12 4	7 2	2.3	1.2
		7,000	.....	1.24	..	*c*1920	.....	.....	.....	.....	3 7	4.3	2 7	8 4	13 7	12 8	13.6	12.7	12.1	9.7	4 2	2.1
2-D	Escondido Mutual Water Co. (*d*)	.....	.....	...	..	*c*1906	.....	.....	.....	...	12 8	35 1	8 5	...			...	.....	.....	4.9	5.7	33.0
		.....	.....	....	....	*c*1907	.....	.....	.....	...	4.9	4 3	11.2	20 6	17.5	16.6	2.2	.....	.....	2.8	.....	19 9
		.....	.....	.....	....	*c*1908	.....	.....	.....	.....	18.3	11 3	16 2	26.3	24.5	.....	.....	.....	.....	.....	3.4	.....
		.....	.....	.....	.....	*c*1909	.....	.....	.....	.....	20 2	14 1	34 5	31 2	...	...	.....	.....	.....	.....	.....	.....
		.....	.....	.....	.....	*c*1910	.....	.....	.....	.....	16.5	25.3	28 3	14 0	12.4	3.5	.....	.....	.....	.....	.....	.....
		1,690	.....	0.66	....	*f*1917	.....	*g*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,750	.....	0.73	..	*f*1918	.....	*g*100.0	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,000	.....	0.66	..	*f*1919	.....	*g*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,250	.....	0.64	...	*f*1920	.....	*g*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,500	.....	0.74	...	*f*1921	.....	*g*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2-E	Mission Valley (*h*) (*i*)	1,114	4 08	.....	.....	1912	67 1	4.3	3.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2-E	Cuyamaca Water Co. (*h*)	3,725	....	0 96	.....	*f*1909	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3,725	.....	1 03	.....	*f*1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3,725	.....	*j*0.81	.....	*f*1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3,725	.....	*j*0.77	.....	*f*1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Continued on next page.

TABLE 8.

REMARKS—(*a*) Deciduous belt. (*b*) From company. (*c*) From An. Rpts. of company to State R. R. Comm. (*d*) San Luis Rey River. (*e*) From data collected by W. S. Post, Los Angeles, from Volcan Water Co. (*f*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*g*) From J. B. Dixon, Escondido. (*h*) San Diego River. (*i*) From rpt. by C. S. Alverson to State R. R. Comm. on ground waters of San Diego River. (*j*) Full supply not furnished to irrigators.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct.	P ct	P ct	P ct	P ct	P ct.
	Continued from page 130																					
2-E	Cuyamaca Water Co. (*a*)	3,725	...	*e*0 48	.	*d*1913	.	...	...	...	7 8	8 2	10 3	18 3	16 7	11 7	12 0	6 4	6 1	1 4	0 7	0 4
		3,725	...	*e*0 64		*d*1914	.	...	...	...	0 7	0 6	8 7	13 3	12 2	11 5	12 9	15 7	10 3	6 7	4 6	2 8
		3,725	...	0 81		*d*1915	*b*1 4	*b*91 0	..	*b*7 6	3 6	3 3	4 8	9 0	8 0	12 1	13 1	12 4	11 6	11 9	8 8	4 4
		3,725	...	0 96		*d*1916	*b*1 4	*b*91 0	..	*b*7 6	2 4	1 5	3 3	7 6	11 9	11 7	13 9	12 1	10 7	7 9	9 3	7 7
		3,725	...	0 77		*d*1917					4 3	4 3	6 4	5 7	6 2	11 8	14 2	13 0	11 2	10 8	7 0	5 1
		3,725	...	0 73		*d*1918	.	*c*81 8		*c*18 2	1 2	1 3	0 6	4 1	14 1	14 8	15 5	15 6	13 5	9 7	4 9	1 7
		3,725	...	0 75		*d*1919					1 9	1 2	0 9	4 5	12 9	16 6	18 5	17 2	13 4	8 2	4 1	0 6
		3,725	...	0 79		*d*1920	..				1 5	2 0	0 5	1 2	10 1	15 7	16 1	17 7	15 8	9 5	5 5	3 4
		1,167	...	0 96		*e*1916	...		...	100 0	..	..	..	..	..	..	..	..	..	...	...	..
2-E	La Mesa, Lemon Grove and Spring Valley Irrigation Dist. (*a*)	722	5 20	.		*f*1912	100 0	.			.											
2-E	Sweetwater Water Co. (*g*)	2,024		1 05		*h*1909	...	.			...											
		2,994	1 38	1 21	12 6	*h*1910		100 0			0 2	1 1	3 6	7 9	14 2	14 7	14 3	14 5	14 0	6 0	3 9	5 6
		3,152	1 44	1 14	21 0	*h*1911			.		0 5	0 3	0 1	9 7	13 8	13 1	13 1	15 0	13 2	9 9	7 0	4 0 9
		3,810	1 21	1 01	9 7	*h*1912					0 5	5 3	3 9	0 6	4 4	15 2	13 8	15 7	13 4	10 1	9 2	7 9
		3,632	*h*1 10	0 96	12 9	*d*1913					2 5	0 5	1 6	7 0	16 2	12 5	13 6	15 2	11 1	10 6	4 7	1 5
		3,825	.	0 88		*d*1914		100 0			0 4	0 3	2 1	7 6	10 9	15 4	16 4	16 8	15 6	8 5	4 9	1 1
		3,954		0 95		*d*1915					0 4	0 2	0 7	6 2	4 7	18 2	15 6	17 9	14 5	11 5	4 8	2 3
		4,000		0 82		*d*1916	..				0 8	0 1	1 3	3 6	13 6	14 9	13 1	17 2	13 3	7 7	8 2	6 2 5
		4,000	.	1 00		*d*1917					0 8	0 4	0 6	4 6	7 6	12 8	14 5	15 1	14 6	12 3	9 2	7 5
		4,200	.	1 03		*d*1918	*c*14 3	*c*71 4		*c*14 3	4 6	1 0		3 2	13 4	14 3	15 1	15 1	14 5	8 9	9 1	0 8 2
		4,300	.	1 17		*d*1919	.				0 2	0 2	0 1	0 4	13 7	17 0	16 9	20 1	12 9	10 8	7 2	0 2
		4,300	...	1 15	..	*d*1920					3 1	2 3	0 3	1 3	11 1	13 7	14 6	15 2	13 8	12 0	7 1	5 5
		1,293	...	1 47		*e*1916			.	100 0	..	...	..	..	...	...	...	...	.	...	..	...
2-E	City of San Diego (*c*)	33	...	0 55		1916			..	100 0	..	..	...	..	...	...	...	...	..	...	.	..
2-	Average of eighteen mutual water companies (*b*) (*i*)	29,464	.	1 52	.		12 0	88 0		.	.			..	...	...	...	...	...	...	...	...
2-	Average of fifty-six mutual water companies (*b*) (*i*)	113,277	...	1 58	.		18 0	82 0	..	.	..			.	...	...	...	...	...	...	...	...

REMARKS—(*a*) From San Diego River. (*b*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. Isles. (*c*) From U. S. D. A. data collected by C. E. Tait. (*d*) From An. Rpts. of company to State R. R. Comm. (*e*) Full supply not furnished to irrigators. (*f*) From rpt. by C. S. Alverson to State R. R. Comm. on ground waters of San Diego River. (*g*) From Sweetwater River. (*h*) From J. F. Covert, engineer for company, San Diego. (*i*) Unclassified mutual water companies in Southern California.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P.ct.	P.ct.	P ct.	P ct	P ct	P ct.	P ct.	P ct	P ct.	P.ct	P ct	P ct.	P ct.	P ct	P ct.
3-A	Coachella Valley farms (*a*).....	1,139	.....	4 95		1920	13 8	20 8	8 6	56 8	4 0	4 6	6 2	11 6	10 4	11 0	14.0	15.0	9 0	5.4	4.9	3.9
3-B	Imperial Water Co. No. 3 (*i*).....	9,742	1 28	1 08	15.3	*d*1914	10 9	.....	.....	89 1	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...
		16,582	1 85	1.62	12 3	*d*1915	6 6	.....	.....	93 4	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...
		18,312	3.35	3.32	0.5	*d*1916	5 0	.....	.....	95 0	3 0	5 0	8 0	10 0	10 0	11 0	11 0	11 0	9 0	8.0	8 0	6 0
		35,000	...	....	.	*c*1917	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		44,000	3 00	.....	.	*b*1918	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		50.416	*d*3 6	.....	.	*b*1920	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3-B	Imperial Water Co. No. 9 (*i*)	*e*18,000	3 00	...		*b*1918	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*e*22,000	*d*3 00	.....		*b*1920	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3-C	Imperial Water Co. No. 4 (*i*)	....	.....	. .		*f*1905	....	.....	.....		6 0	1 0	4 0	18 0	9 0	7 0	15 0	8 0	6 0	5 0	6 0	15.0
		15,000	1 62	.		*f*1906	..	.....	.....		11 0	4 0	19 0	18 0	8 0	6 0	5 0	4 0	4 0	6.0	8 0	7.0
		18,050	.....	.....		*c*1908	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,050	.....	.....	.	*c*1909	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,050	.....	.....		*c*1910	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,050	.....	.....	. .	*c*1911	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,000	3 21	.....	...	*f*1912	....	.....	.....		5 0	6 0	10 0	10 0	9 0	11 0	10 0	10 0	9 0	8 0	7 0	5 0
		17,500	3.38	.....	.....	*f*1913	....	.....	.....	..	6 0	5 0	10 0	9 0	10 0	12 0	11.0	11 0	8 0	6 0	6 0	6.0
		18,050	*h*3.75	.....	.....	*c*1914	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,050	....	.....	.....	*c*1915	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,050	4 09	.....	. .	*b*1916	....	.....	.....	...	5 0	6 0	8 0	8.0	9 0	11 0	8.0	11.0	10 0	11.0	8 0	5 0
		18,100	.....	.....	.....	*c*1917	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		19,000	3 02	.....	.....	*b*1919	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		20,000	2.63	.....	.....	*b*1920	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3-C	Imperial Water Co. No. 8 (*i*).	*g*14,680	.....	....	.....	*c*1908	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*g*15,670	.....	.....	.....	*c*1909	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*g*17,460	.....	.....	.....	*c*1910	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*g*19,810	.....	.....	.....	*c*1911	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*g*24,000	3.29	.....	.....	*f*1912	....	.....	.....	.....	5 0	6 0	9 0	10 0	8 0	9 0	11 0	13 0	10 0	8 0	6 0	5 0
		*g*24,000	3 74	.....	.....	*f*1913	....	.....	.....	.....	5.0	6 0	10 0	10.0	10 0	10 0	10 0	12 0	10 0	7.0	5 0	5.0
	Continued on next page.	*g*18,000	4.63	.....	.....	*bh*1914	....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) Weighted mean for 19 farms; data by A. L. Sonderegger, Los Angeles. (*b*) From company rpt. to State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*c*) From State Dept. of Pub. Wks., Div. of W. Rts. (*d*) Company estimate. (*e*) From census by company. (*f*) From 4th Bien. Rpt., State Dept. of Eng. (*g*) Acreage based on number of shares of water stock. (*h*) Tabulation of F. R. Spencer, State Dept. of Public Wks., Div. of Eng. and Irrig. files. (*i*) Gross duty based on water measured to mutual companies by Imperial Irrig. Dist. Measurements made at heads of company canals. Computations would show more water used if based on water diverted from Colorado River.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct.		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
	Continued from page 132.																					
3-C	Imperial Water Co. No. 8 (*g*).....	*c*26,950	....	....	..	*a*1915	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*c*27,324	4 04	3.51	13 2	*b*1916	45 0	....	....	55 0	5 0	5 0	8 0	9 0	10 0	13 0	11.0	12 0	10 0	7.0	6.0	4 0
		*c*30,000	....	....	..	*a*1917	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*c*38,000	2 89	....	..	*b*1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*c*43,500	2 62	....	..	*b*1920	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3-D	Imperial Water Co. No. 12 (*g*).....	1,650	....	....	..	*a*1909	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		2,770	....	....	....	*a*1910	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		5,270	....	....	....	*a*1911	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		11,000	1 75	1 51	13 5	*b*1912	....	....	....	....	5 0	6 0	10 0	10 0	8 0	10 0	11 0	12 0	9 0	8 0	6 0	5 0
		12,000	2 51	2 14	14 6	*c*1913	....	....	....	....	4 0	5 0	8 0	12 0	13 0	9 0	11.0	14 0	10 0	7 0	4 0	3 0
		12,300	2 44	2 20	9 3	*b*1914	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		11,500	2 87	2 56	10 6	*b*1915	22 2	....	....	77 8	....	....	....	....	....	....	....	....	....	....	....	....
		11,505	3 14	2 68	14 7	*b*1916	23 6	....	....	76 4	2 0	5 0	6 0	10 0	11 0	14 0	12 0	15 0	12 0	7 0	4 0	2 0
		12,000	....	....	....	*a*1917	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		12,100	3 20	....	....	*b*1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		15,000	*d*3 00	....	....	*b*1920	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3-D	Imperial Water Co. No. 2 (*g*).	*f*490	....	....	..	*a*1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*490	....	....	....	*a*1913	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*4,000	3 70	....	....	*b*1914	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*4,200	....	....	....	*a*1915	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*5,000	4 95	....	..	*b*1916	....	....	....	....	3 0	7 0	9 0	10 0	13 0	11 0	10 0	11 0	10 0	7 0	5 0	4 0
		*f*6,000	....	....	....	*a*1917	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*6,400	3 05	....	....	*b*1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*7,000	3 00	....	....	*b*1920	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3-E	Imperial Water Co. No. 1 (*g*).....					*c*1905	....	....	....	....	5 0	2 0	6 0	18 0	10 0	10 0	12 0	11 0	8 0	7 0	5 0	6 0
		*f*70,000	....	1 82	....	*c*1906	....	....	....	....	9 0	5 0	14 0	13 0	9 0	9 0	8 0	8 0	7 0	7.0	6 0	5 0
		*f*67,000	....	....	....	*a*1908	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		*f*78,000	....	....	....	*a*1909	....	....	....	....	6 0	8 0	9 0	11 0	10 0	11 0	11 0	8 0	7.0	7 0	6 0	6 0
		*f*90,911	....	2 62	....	*c*1910	47 8	1 7	29 8	20 7	5 0	6 0	11 0	11 0	11 0	11 0	8 0	8 0	9 0	8 0	6 0	6 0
		*f*99,572	....	2 76	....	*c*1911	11 4	1 4	29 0	55 2	4 0	4 0	8 0	9 0	10 0	11 0	11 0	12 0	11 0	8 0	6 0	6 0
	Continued on next page.	*f*100,681	....	3 15	....	*c*1912	16 8	0 9	26 0	26 3	6 0	6 0	9 0	9 0	9 0	11 0	11 0	11 0	9 0	8 0	6 9	5 0

REMARKS—(*a*) From State Dept. of Pub. Wks., Div. of W. Rts. (*b*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*c*) Acreage based on number of shares of water stock. (*d*) Estimated. (*e*) From 4th Bien. Rpt., State Dept. of Eng. (*f*) From census by company. (*g*) Gross duty based on water measured to mutual companies by Imperial Irrig. Dist. Measurements made at heads of company canals. Computations would show more water used if based on water diverted from Colorado River.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct		P ct.	P.ct.	P.ct.	P ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
	Continued from page 133.																					
3-E	Imperial Water Co. No. 1 (*j*)	*f*100,681	.....	3 35	..	*a*1913	59 0	0 9	32 0	8 1	4 0	5 0	8 0	9 0	11 0	12 0	13 0	12 0	9 0	8 0	5.0	4.0
		*f*105,902	.....	3.39	..	*b*1914	54 1	0 9	16.5	28 5	5 0	4 0	8 0	9 0	11 0	13 0	14 0	12 0	10 0	7 0	4 0	3.0
		*f*108,224	3.11	3 02	2 9	*b*1915	47 9	1.7	18.8	31 6	3 0	2 0	8 0	9 0	10 0	14 0	15 0	11 0	11 0	8 0	5.0	4.0
		*f*105,100	3.33	3 18	4 6	*b*1916	42 5	2 0	11 8	43 7	3 0	5 0	7 0	9 0	12 0	13 0	11 0	12 0	12 0	8 0	5.0	3.0
		*bf*113,503	*b*3 21	*c*2 85	*d*11 2	*b*1917	31 5	2 2	9 0	57 3	2 0	4 0	8 0	10 0	11 0	13 0	15 0	9 0	11 0	10 0	4 0	3 0
		*f*123,915	2 96	*c*2 59	*d*12 6	*b*1918	30 3	1.9	9.7	58 1	3 0	4.0	6 0	11 0	11 0	12 0	14 0	13 0	12 0	7 0	4 0	3.0
		*e*120,000	3.19	2 91	8 7	*d*1919	.....	.....	.....	.....	4 0	4 0	8 0	10 0	11 0	13 0	13 0	13 0	10 0	7 0	4 0	3.0
		*f*118,500	3.15	*c*2 62	*d*16.9	*b*1920	....	.....	....	..	*d*2 0	2 0	8 0	11.0	11 0	13 0	15 0	13 0	10.0	7 0	4 0	4.0
		*e*115,000	2 53	2 22	12.3	*d*1921	....	.....	.....	.	3 0	6 0	9 0	10 0	11 0	14 0	13 0	8 0	9.0	7.0	6.0	4.0
3-F	Imperial Irrigation Dist. (*g*) (*j*)	25,000	.....	....	.....	*b*1904	....	.....	.....	.	7 0	6 0	8 0	8 0	9 0	7 0	9 0	9 0	8 0	9 0	11.0	9.0
		.....	.....	.....	.....	1905	.....	.....	.....	.....	7 0	3 0	5 0	19 0	9 0	8 0	10 0	10 0	8 0	8 0	5 0	8 0
		127,423	.....	.....	.....	1906	10 6	0 4	80 0	9 0	9 0	5 0	14 0	13 0	9 0	10 0	8 0	8 0	7 0	6 0	6 0	5 0
		50,000	....	.....	.....	1907	....	.....	.....	.....	4 0	7 0	10 0	13 0	9 0	8 0	10 0	9 0	9 0	6 0	8 0	7.0
		141,030	.....	....	..	*b*1908	....	.....	.....	.....	6 0	5 0	11 0	11 0	10 0	10 0	11 0	10 0	8 0	8 0	6 0	4.0
		160,470	.....	....	.....	*b*1909	....	.....	.....	..	6 0	8 0	10 0	12 0	9 0	10 0	12 0	7 0	7 0	7 0	6 0	6 0
		181,191	.....	....	.....	*b*1910	....	.....	.....	.....	5 0	6 0	11 0	12 0	11 0	10 0	8 0	8 0	9 0	8 0	6 0	6.0
		201,782	.....	....	.....	*b*1911	....	.....	.....	.	4 0	4 0	9 0	10 0	10 0	10 0	11.0	12 0	10 0	8 0	6 0	6.0
		220,511	.....	2.67	22 0	*b*1912	44.0	.....	47 9	8 1	5 0	6 0	9 0	10 0	8 0	10 0	11 0	12 0	10 0	8 0	6 0	5.0
		242,036	.....	....	...	*b*1913	....	.....	.....	....	4 0	5 0	9 0	10 0	10 0	11 0	12 0	12 0	9 0	8 0	5 0	5 0
		277,232	.....	....	..	*b*1914	47 1	.....	26 6	26 3	4 0	4 0	8 0	9 0	11 0	12 0	13 0	12 0	11 0	8 0	5 0	3.0
		293,534	.....	....	..	*b*1915	....	.....	.....	.....	5 0	4 0	8 0	9 0	9 0	13 0	11 0	10 0	10.0	9 0	6 0	6 0
		308,009	3.91	....	..	*b*1916	42 1	.....	35.5	22 4	3 0	5 0	7 0	11 0	11 0	12 0	12 0	13 0	12.0	7 0	4 0	3.0
		344,200	3 79	....	.	*b*1917	....	.....	.....	.....	2 0	5 0	7 0	9 0	11 0	12 0	15 0	10 0	11 0	10 0	4 0	4.0
		367,020	3.94	.....	.....	*b*1918	21 7	.....	31 5	46 8	3 0	4 0	6 0	10 0	12 0	11 0	13 0	13 0	12 0	8 0	4 0	4.0
		413,440	3 46	....	...	*b*1919	23 9	.....	31 8	44 3	4 0	4 0	7 0	10 0	11 0	12 0	14 0	11 0	11.0	6 0	4 0	3 0
		411,724	3 26	....	.	*b*1920	16 9	...	30 6	62 5	3 0	3 0	7 0	11 0	11 0	12 0	16 0	14 0	10 0	6 0	3 0	4.0
		*h*410,610	3.08	....	..	1921	....	.....	.....	.....	5.0	7.0	9.0	10 0	11.0	12.0	13.0	10 0	8.0	6.0	5.0	4.0
3-G	Imperial Water Co. No. 5 (*j*)	.....	.....	.....	.....	.....	*a*1905	.....	.....	.....	.....	10 0	7.0	1.0	17 0	8 0	5.0	9 0	9 0	8 0	10 0	5.0	11.0
		25,000	2 62	....	....	*a*1906	....	.....	.....	...	8 0	4 0	14 0	13 0	9 0	12 0	10 0	9 0	7.0	6.0	5.0	3.0
		21,000	.....	....	.	*i*1908	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Continued on next page.	24,000	.....	....	..	*i*1909	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE 8.

REMARKS—(*a*) From 4th Bien. Rpt., State Dept. of Eng. (*b*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*c*) Computed from losses. (*d*) From company. (*e*) Estimated. (*f*) From census by company. (*g*) Includes all the Imperial Water Companies. (*h*) Min. acreage under contract; assumed. (*i*) From State Dept. of Pub. Wks., Div. of W. Rts. (*j*) Gross duty based on water measured to mutual water companies by Imperial Irrig. Dist. Measurements made at heads of company canals. Computations would show more water used if based on water diverted from Colorado River.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.
	Continued from page 134.																					
3-G	Imperial Water Co. No. 5 (*f*)	27,000	.....	.....	.....	*a*1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		32,000	.....	.....	.....	*a*1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		38,750	4.39	2.79	36.4	*a*1912	.....	.....	.....	.....	5.0	7.0	11.0	10.0	7.0	7.0	12.0	13.0	10.0	9.0	6.0	5.0
		47,025	4.20	.....	.....	*b*1913	.....	.....	.....	.....	4.0	5.0	9.0	10.0	11.0	10.0	12.0	12.0	9.0	8.0	5.0	5.0
		63,450	4.36	2.82	35.2	*c*1914	42.6	.....	.....	57.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		67,375	3.95	2.56	35.2	*c*1915	37.0	.....	.....	63.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		64,686	4.63	3.22	30.4	*c*1916	34.4	0.3	49.5	15.8	3.0	7.0	10.0	12.0	10.0	10.0	11.0	11.0	10.0	8.0	5.0	3.0
		75,000	3.20	3.07	4.1	*c*1917	26.2	0.3	.....	73.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		61,150	.....	4.05	.....	*c*1918	35.7	0.4	63.5	0.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		57,111	.....	.....	.....	*c*1919	28.8	.....	71.1	0.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		.....	3.40	.....	.....	1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3-G	Imperial Water Co. No. 7 (*f*)	.....	.....	.....	.....	*b*1905	.....	.....	.....	.....	10.0	5.0	1.0	23.0	10.0	4.0	1.0	13.0	13.0	8.0	4.0	8.0
		10,000	2.13	.....	.....	*b*1906	75.0	.....	.....	25.0	7.0	5.0	12.0	12.0	10.0	9.0	9.0	7.0	9.0	7.0	6.0	7.0
		13,800	.....	.....	.....	*a*1908	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		14,100	.....	.....	.....	*a*1909	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		14,500	.....	.....	.....	*a*1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		14,800	.....	.....	.....	*a*1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		16,750	3.53	.....	.....	*c*1912	.....	.....	.....	.....	1.0	7.0	7.0	9.0	9.0	10.0	10.0	13.0	11.0	9.0	6.0	5.0
		16,000	3.82	.....	.....	*b*1913	75.0	.....	.....	25.0	4.0	4.0	8.0	8.0	11.0	12.0	14.0	13.0	10.0	8.0	4.0	4.0
		16,248	4.30	2.78	35.4	*c*1914	73.7	.....	.....	26.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		16,188	3.98	2.66	33.0	*c*1915	75.8	.....	.....	24.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		17,768	3.96	2.61	34.1	*c*1916	72.8	.....	.....	27.2	4.0	7.0	8.0	9.0	9.0	11.0	11.0	12.0	11.0	7.0	5.0	4.0
		17,500	.....	.....	.....	*a*1917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		19,180	3.14	.....	.....	*c*1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		19,805	*d*3.00	.....	.....	*c*1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3-G	Imperial South Side Water Co. (*f*)	*e*8,000	2.00	1.63	18.8	*c*1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*e*16,000	2.80	2.25	22.8	*b*1913	.....	.....	.....	.....	4.0	5.0	8.0	9.0	10.0	11.0	15.0	15.0	9.0	6.0	5.0	5.0
		*e*16,000	3.24	2.56	21.2	*c*1914	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*e*16,500	2.27	2.58	21.3	*c*1915	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*e*17,000	3.41	2.59	24.1	*c*1916	.....	.....	.....	.....	3.0	6.0	7.0	11.0	4.0	11.0	13.0	13.0	12.0	8.0	5.0	4.0
		*e*17,000	.....	.....	.....	*a*1917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*e*18,000	3.10	.....	.....	*c*1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,029	2.70	.....	.....	*c*1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) State Dept. of Pub. Wks., Div. of W. Rts. (*b*) From 4th Biem. Rpt., State Dept. of Eng. (*c*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*d*) Estimated. (*e*) From census by company. (*f*) Gross duty based on water measured to mutual companies by Imperial Irrig. Dist. Measurements made at heads of company canals. Computations would show more water used if based on water diverted from Colorado River.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct.	P.ct
3-H	Imperial East Side Water Co. (*g*)	300				*a*1912																
		1,000				*a*1913																
		1,800				*a*1914																
		2,200				*a*1915																
		2,200	4 89			*b*1916					4 0	7.0	10 0	11 0	10 0	9 0	11 0	11 0	11 0	7.0	3.0	5 0
		3,000				*a*1917																
3-H	South Alamo Water Co. (*b*)	785				1916																
		900				1917																
3-H	Imperial Water Co. No. 6 (*g*)	*c*6,500				*a*1908																
		*c*9,000				*a*1909																
		*c*10,500				*b*1910																
		*c*12,280				*a*1911																
		*c*15,000	2 60			1912					5 0	6 0	11 0	12 0	7.0	9 0	11.0	10.0	9.0	8.0	7.0	5 0
		*c*17,600	2 95			*d*1913					4 0	4 0	8.0	12 0	11.0	11.0	12.0	13.0	10 0	8.0	4.0	3.0
		*c*15,500	3 89			*a*1914																
		*c*15,000				*a*1915																
		*c*18,000	3 66			*b*1916					1 0	3.0	4 0	12 0	11.0	15 0	11.0	16.0	15 0	7 0	3.0	2 0
		*c*19,500				*a*1917																
		*c*20,540	3 00			*a*1918																
		*c*22,000	3.00			*a*1920																
3-I	Yuma Project, U. S. R. S. (*e*)		7.00	4.85	30 7	1909																
		8,570	4.20	3 10	26 2	1910	57 2	0 9	35.8	6 1												
			7.15	5.43	24.1	1911																
		13,767	7.00	4 59	34 4	1912					3.9	8 9	7 6	8 5	9 6	9.1	10.9	13.6	11.1	7 4	4 8	4 6
		19,607	6 50	4.36	32 9	1913					1 6	7 1	8 7	9 6	9 9	12.3	14 0	11 7	10 8	6.7	3 7	3 9
		25,207	8 14	3.69	54 6	1914	41.0		25 0	34 0	5 4	3 8	9 2	8 9	10 1	11.9	11 9	12.2	13.3	7 1	2 7	3.5
		27,857	8 88	3.34	62 4	1915	34 0		35 0	31 0	3.0	1.0	12 0	10 0	8 1	13.2	12.2	12.5	12 0	7 6	6.3	2.1
		29,483	8 46	3 20	62 2	1916	37.0		29 0	34 0	2 2	3 8	8 8	9 7	10 3	14 0	12 2	15.0	11 2	6.9	3 7	2 2
		36,956	9 14	3.70	59 6	1917	35 0	0 5	35 5	29 0	1 6	5 4	10 0	9 7	11.3	11.9	12 5	13.0	11 6	7 6	2 4	3.0
		45,670	6 76	3.29	51 3	1918	20 0		20 0	60 0	1 5	1 8	9.1	10.0	9 1	12 3	17.4	17.2	12.8	6.7	1 2	0 9
		53,284	8 98	2 90	67 7	1919	30 5	0 1	17 2	*f*52 2												
		54,550	8 59	2.94	65.8	1920	35 0	0 2	6.9	*f*57.9												

TABLE 8.

REMARKS—(*a*) From State Dept. of Pub. Wks., Div. of W. Rts. (*b*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*c*) Acreage based on number of shares of water stock. (*d*) From 4th Bien Rpt., State Dept. of Eng. (*e*) From Reclamation Record, U. S. R. S. (*f*) Cotton. (*g*) Gross duty based on water measured to mutual companies by Imperial Irrig. Dist. Measurements made at heads of company canals. Computations would show more water used if based on water diverted from Colorado River.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P ct	P.ct	P.ct	P.ct.	P ct	P ct	P.ct	P.ct.	P.ct	P.ct	P.ct
3-J	Palo Verde Mutual Water Co.	32,000	4.90	4 00	a20 0	b	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		33,376	...	...	...	c1921	16 0	...	16 0	68 0	1.0	3.0	10 0	13 0	10.0	15 0	19 0	19.0	8 0	0.5	1 0	0 5
4-A	Palmdale Water Co.	b400	...	0 75	..	d1916	...	100 0	...	...	...	..	x	x	...	x	...	-	x	...	...	..
		525	...	0 75	...	b1918	23.8	76 2	...	...	...	...	...	...	...	...	...	...	...	...	...	
4-B	Little Rock Irrigation Dist.	1,500	...	0 85	..	d1916	...	100.0	...	..	...	...	...	...	...	...	...	...	...	...	...	
		...	...	1 50	...	e	...	...	...	..	...	...	hx	x	x	x	...	...	...	...	...	
		...	...	1 00	.	f	...	100 0	...	.	g	..	...	...	...	...	...	...	...	...	...	
4-C	Appleton Land, Water and Power Co. (b)	200	...	0 80	.	1918	70 0	30 0	...		...	...	...	...	...	...	...	...	...	...	...	
4-D	Mohave River Irrigation Dist. (d).	1,330		0 82		1916		100 0	..										..	...		..
4-D	Victor Valley Irrigation Dist. (a)	1,754	.	2 86		1912	37 0	63 0	...	.	.	.	...	...	...	...	...	...	...	...	...	
4-D	Victor Valley, San Bernardino County.	j196	..	12 40	..	1917	100 0		..		...	...	...	...	...	...	...	...	...	...	...	...
		796	...	0 98	.	1917	.	100 0	...		...	...	...	...	...	...	...	...	...	...	...	
5-A	Newlands Project, U. S. R. S., State of Nevada (a) (b). (Formerly Truckee-Carson Project)	29,325	6 8	5 00	26 0	k1909																
		27,557	6 5	4 70	28 0	k1910	37 6	0 3	43.4	18 7												
		30,139	8 7	4 50	48 0	k1911																
		25,050	9 74	2 50	74 4	k1912							4 4	16 0	24 0	24 4	9 2	8 4	11 6	2 0		
		30,857	6 04	2 26	62 5	l1913	...						2 8	20 4	24 3	9 7	15 4	11 1	12 3	4 0	..	
		28,651	9.36	5 29	65 5	l1914							0 9	14 0	19 5	15 2	22 2	16 1	8 2	3 9		
		40,295	5 81	2 94	49 4	l1915	m50 0	...	41 0	9 0	...	...	1 7	11 6	14 6	21 4	21 1	16 0	8 8	3 4	1 4	
		39,400	6 71	3.32	50 5	l1916	m54 0	...	41 0	5 0	...	...	1 2	13 2	20 3	20 5	22 1	13 8	7 8	0 3	0.3	
		40,392	6 56	3 11	52 6	l1917	m56 0	...	34 0	10 0	...	...	2 2	6 8	18 3	21 2	23 2	15 7	10 0	2 6	...	

Continued on next page.

REMARKS—(a) Estimated by company. (b) From U. S. D. A. data collected by C. E. Tait. (c) From company. (d) From rpt. of findings, Mohave River Comm. (e) From Eng. News-Record, Jan. 24, 1918. (f) Measurements by Allin Bros., Pasadena. (g) Irrigating season 152 days. (h) Season from Mar. 1 to June 30. (i) From 6th Bien. Rpt., State Dept. of Eng. (j) For weighted average of tracts on which measurements were made. Mohave River Comm. states that as two tracts were in river bottom where water was plentiful and application cheap, too much water was used. It recommends a depth of 5.72 feet or less. (k) From An. Rpt. of U. S. R. S. (l) From Reclamation Record, U. S. R. S., Vols. 1 to 11. (m) Crop census compiled from detailed tabulations found in Reclamation Record. (x) Water used during these months; quantity unknown

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
	Continued from page 137.																					
5-A	Newlands Project, U. S. R. S., State of Nevada (*a*) (*b*). (Formerly Truckee-Carson Project)	42,311	6.31	2.99	52.6	1918	60.0	.....	36 0	4 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		44,324	7.16	3 02	57.8	1919	63.0	.....	32 0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		45,610	5.68	2 85	49.7	1920	68.0	.....	28.0	4 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-B	Raneb near Shealy	80	.....	1.50	.....	1921	.....	.....	.....	c100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Dell Canal, Inyo County (*d*) (*e*)	1,300	5.95	.....	.....	1904	*x*	.....	*x*	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Rawson Canal, Inyo County (*d*) (*e*)	4,000	2 88	.....	.....	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Bishop Creek Assn., Inyo County (*d*) (*e*)	6,600	1.23	.....	.....	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	McNally Canal, Inyo County (*d*) (*e*)	7,000	2 69	.....	.....	1904	.....	.....	.....	*fx*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Farmers Canal, Inyo County (*d*) (*e*)	1,800	5 79	.....	.....	1904	28.0	.....	.....	72 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Bishop Creek Canal, Inyo County (*d*) (*e*)	8,000	4.31	.....	.....	1904	19.0	1 0	15 0	65.0	.....	.....	.....	10 2	17 5	19 6	20.2	20.2	12.3	.....	.....	.....
		g8,570	4 64	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Owens River, Inyo County (*d*) (*e*)	3,010	8.60	.....	.....	1909	*x*	*x*	*x*	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-C	Stevens Canal, Inyo County (*d*) (*e*)	2,400	2 58	.....	.....	1904	*x*	.....	*x*	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-D	Owens River and Big Pine Canal, Inyo County (*d*) (*e*)	4,000	4 21	.....	.....	1904	40.0	.....	18 0	42.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-E	Owens River Canal, Inyn County (*d*) (*e*)	7,000	2.19	.....	.....	1904	*x*	.....	*x*	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5-E	Oak Creek (*e*) (*h*)	606	.....	6.83	.....	1909	25 0	.....	57 0	18 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) From Reclamation Record of U. S. R. S., Vols. 1 to 11. (*b*) Crop census compiled from detailed tabulations found in Reclamation Record. (*c*) Meadow hay, two crops per year. (*d*) Measurements by U. S. G. S. (*e*) From 4th Biem. Rpt., State Dept. of Eng. (*f*) Mostly grass. (*g*) From case of Hillside Water Co. vs. Wm. A. Trickey before A. E. Chandler, Arbitrator, July, 1921. Use estimated by defendant's engineers. (*h*) Measurements by C. H. Lee, San Francisco. (*x*) These crops irrigated; area unknown.

TABLE 8 —(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
6-A	Oakdale Irrigation Dist. (*a*) (*b*)	..	..	..	..	1915	..	..	..	..	0.7	..	4.5	10.6	14.8	21.2	16.5	13.0	10.9	6.7	1.1	..
		12,960	*c*7.90	.	.	1916	46.0	11.7	21.4	*d*20.9	.	..	0.3	10.7	20.9	21.5	20.5	13.0	8.1	5.0	.	
		18,792	*c*6.90			1917	40.7	12.7	19.3	*e*27.3		2.1	0.7	15.1	18.9	20.0	20.5	10.2	7.7	4.5	.	..
		18,928	*c*4.30			1918	43.6	11.3	21.1	*f*24.0	..		2.4	10.9	27.0	26.0	14.4	10.9	8.4		.	
		19,083	..			1919	44.4	11.8	19.7	*g*24.1	.		..	..	..	..	..	..	..	..	..	
		18,876	6.76			1921	*x*52.5	21.0	11.8	*h*11.7			..	..	..	..	..	..	..	..	..	
6-C	Foothill Ditch Co. (*j*) (*k*)	*l*1,797	*l*2.13			1914	.	*x*	..					5.2	23.6	23.8	13.5	10.9	15.7	1.3		
		*l*1,797	*l*2.13			1915	..	*x*	..				1.6	13.8	3.2	16.5	11.1	20.3	16.8	12.5	1.7	0.4
		*l*1,797	*l*2.13			1916	..	*x*	..					6.9	20.0	18.4	19.5	18.1	16.9	0.2		
		*l*1,797	*l*2.13			1917	..	*x*						6.8	17.1	14.6	18.7	15.2	11.1	12.1	1.1	
		*l*1,797	*l*2.13	..		1918	.	*x*				1.7		3.1	17.3	16.2	16.6	15.5	14.6	8.0	3.5	
		*l*1,797	*l*2.13			1919		*x*						10.5	17.6	14.1	13.0	16.4	13.6	13.0	1.8	
		*l*1,797	*l*2.13			1920	..	*x*					..	2.2	20.1	21.6	13.0	11.7	14.8	9.0	1.6	
6-D	Marks and Rice Ditch (*m*)	129				1920	.	100.0					9.2	17.8	18.4	17.8	18.4	18.4				
		129	.			1921	..						11.8	11.8	11.8	11.8	11.8	11.7	11.7	11.7	5.9	
6-D	Lemon Cove Ditch (*m*).	1,100	2.10			1920	.	100.0	..		..		9.2	17.8	18.4	17.8	18.4	18.4				
		1,100	3.00			1921	.	.	..				2.7	12.7	13.1	12.8	13.1	13.1	12.7	13.1	6.7	
6-D	Merryman Ditch (*m*)	1,080	1.90			1920	...	100	..				5.9	17.0	20.5	21.8	17.6	17.2				
		1,080	2.70			1921			..				3.8	12.3	13.8	11.5	12.7	12.5	12.3	12.9	5.2	
6-E	Lindsay-Strathmore Irrigation Dist. (*n*) (*o*) . .	7,901	1.80	1.67	3.8	1918	.	*p*80	..	*p*10	.	.	..		14.7	18.8	19.5	18.4	16.3	8.1	3.3	0.6
		9,300	1.65	1.58	2.7	1919		*p*80		*p*10	0.8	0.4	0.6	9.0	16.3	17.0	17.0	16.6	13.4	7.3	1.7	0.5
		9,371	1.61	1.53	5.2	1920	.	*p*90		*p*10	1.3	0.4	0.4	3.1	17.9	17.5	17.5	16.9	15.3	8.1	1.6	
		8,830	..	1.42		1921	.	*p*90	..	*p*10	.	.	..									
6-E	Lindsay Water Development Co. (*q*)	511	..	1.00		1898	.	100.0	..		.	.	.	.	.	.	.	.	.	.	.	
		511		1.63	..	1899	..	100.0	..		..	..	..	..	..	..	..	..	..	..	..	
		511	.	1.50	..	1900	..	100.0	..		.	.	.	.	.	.	.	.	.	.	.	
		511	..	1.44	..	1901	.	100.0	..		..	..	..	..	..	..	..	..	..	..	..	

REMARKS.—(*a*) Water diverted from Stanislaus River to irrigate south of Oakdale. Water first run in 1913. (*b*) From W. S. Papers, U. S. G. S. Nos. 111, 141, 161 and 481, and records of Oakdale Irrigation Dist. (*c*) Deduced from diversions as given in W. S. Papers, U. S. G. S. and district records. (*d*) Rice, 6.7 per cent of total crops. (*e*) Rice, 1.1 per cent of total crops. (*f*) Rice, 8.2 per cent of total crops. (*g*) Rice, 11.6 per cent of total crops. (*h*) Rice, 2.4 per cent of total crops. (*x*) From 1921 district crop report. (*j*) Water diverted from Kaweah River. (*k*) From An. Rpts. of company to State R. R. Comm. (*l*) As only one acreage was given for years 1914 to 1920, inclusive, duty given is average for these years. (*m*) Data from Water Resources of Tulare County and their Utilization by S. T. Harding, 1922. Rpt. of State Dept. of Pub. Wks., Div. of Eng. and Irrig. (*n*) Water pumped from wells to irrigate vicinity Lindsay and Strathmore. (*o*) From company records. (*p*) Estimated by company. (*q*) From 4th Bien. Rpt., State Dept. of Eng. (*x*) These crops irrigated; area unknown.

TABLE 8.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use. in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
6-F	Terra Bella Irrigation Dist. (*a*) (*b*)	*c*3,000	*c*1 75	*c*1.75	.....	1917	.....	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,212	1.50	1.50	.....	1918	.....	*x*	.....	.....	0 6	2.0	0 6	0.8	17.5	21.6	20.2	15 7	14.9	5.5	0.6	....
		1,934	1.63	1.63	.....	1919	.....	87.4	1 9	10.7	....	....	....	1 0	20.3	19.5	16 6	17 3	15 1	8 9	0.4	1.5
		2,901	1.54	1 54	.....	1920	.....	*x*	.....	.....	....	0.6	....	0 4	14.8	21.1	17.9	18 0	16 5	10 7	.....	.....
		.....	1 51	1.51	.....	1921	.....	.....	.....	.....	.....	.....	0.4	5.3	15.3	16.3	17 6	19.1	15.3	10.7	.....	.....
7-B	East Contra Costa Irrigation Co. (*d*) (*e*)	3,733	3.52	2 65	24.8	1917	...	.....	...	.....	....	0.1	0 8	10 7	15 2	22.1	21 4	14 2	8.3	5.2	2 0	.....
		4,206	2.32	2.25	3.1	1918	44 7	.....	23 8	31 5	....	11 6	7 0	7 0	18 6	18 0	17 4	17 1	3.3	.....	.....	.....
		3,247	1.96	1 60	18 2	1919	78 0	.....	20 0	2 0	....	.....	.....	0 6	21.4	*19 8	19.1	19 6	18.0	1.2	0.2	0.1
		5,304	2.88	2.57	11.0	1920	50 4	2.7	46 7	0 2	...	6 1	7 0	13.9	16.4	12 8	16 6	18 7	7.5	1.0	.....	.....
7-C	West Side Irrigation Dist. (*f*) (*g*)	11,000	1.93	*h*1 54	20 0	1919	*x*	*x*	*x*	*x*	12 6	...	.....	8.6	18 5	14 1	7 5	8 6	3.8	9.7	10 1	6.5
		11,200	1 96	*h*1 57	20 0	1920	17 9	0 9	80 3	0 9	2 4	9 6	3 4	15.0	13 8	7.4	9 0	8 9	8.1	8 0	8 4	6 0
		11,750	1 82	*h*1.46	20.0	1921	25 5	0 7	66 4	7 4	1 2	.....	8 1	20.8	12 8	9.3	10.7	8.5	10.8	13.1	4 7	...
7-C	Naglee-Burke Irrigation Dist. (*i*) (*j*)	3,000	.....	*c*2 50	.....	1920	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-C	Riverview Farm and Water Co. (*k*) (*l*)	2,400	.....	*c*2.00	.....	.....	*x*	.....	*x*	*x*	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-C	Byron-Bethany Irrigation Dist. (*q*)	1,750	.....	.	.....	1918	.....	.....	.....	.....	.....	4 8	2 7	21 3	13 4	17 2	26 0	8 8	4.5	1 3	.....	.....
		1,750	...		.....	1919	.....	.....	.....	.....	.....	.....		.....	18 8	21.3	24 3	23 1	11.2	1 3	...	.....
7-E	South San Joaquin Irrigation Dist. (*m*) (*n*)	15,600	.....	.....	.....	1914	50.6	27 6	7.4	14.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		23,211	4.35	*e*3.05	30 0	1915	49.8	24.1	10.3	15 8	2.9	0 1	3.7	10.3	16.9	23.5	20 8	7.6	6 6	4.4	2 7	0 5
		33,524	4 05	*e*2.84	30 0	1916	36.3	14.0	14.3	35.4	.....	.....	0.5	8 7	23.3	22 5	21.2	8.5	5.4	5 4	2 5	2 0
		37,287	4.05	*e*2 84	30 0	1917	37.7	11.5	11 4	39.4	1 6	2 4	8.3	17.8	18.0	17.3	16.7	6 8	5.0	4 6	1 3	0 2
		51,100	2.62	*e*1.83	30 0	1918	35 8	13 5	13.3	37.4	2 0	3.6	0.7	10.8	28.8	29.6	10.3	7.7	6.5	.....	.....	.....
		51,375	2.95	*e*2 00	30.0	1919	41.5	10.8	12.7	35.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		59,302	3.16	*e*2.20	30 0	1920	51 2	12 2	11 0	25 6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		53,074	4.20	*p*2.31	45.0	1921	60.8	13.7	18 7	6.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) Water pumped from wells to irrigate in the vicinity of Terra Bella. (*b*) From rpt. by I. H. Althouse, Ventura, and records of Terra Bella Irrigation Dist. (*c*) Estimated by company (*d*) Water pumped from San Joaquin River, Indian Slough, to irrigate in vicinity of Brentwood. (*e*) From 1920 rpt. by A. Keupke, Chief Eng. (*f*) Water pumped from San Joaquin River to irrigate near Bethany. (*g*) From rpt. of W. D. Harrington, Chief Eng., and notes of R. E. Robson and T. H. Means, San Francisco. (*h*) From 20 per cent loss assumed by R. E. Robson. (*i*) Water pumped from San Joaquin River to irrigate near Tracy. (*j*) From Naglee-Burke Irrigation Dist. (*k*) Water diverted from San Joaquin River to irrigate near Tracy. (*l*) From Riverview Farm and Water Co. (*m*) Water diverted from Stanislaus River to irrigate near Manteca. Water first run in 1913. (*n*) From W. S. Papers, U. S. G. S. Nos. 391, 411, 441, 461 and 481. Records of South San Joaquin Irrigation Dist.; private report by R. E. Robson for T. H. Means, San Francisco. (*o*) Net use computed from a loss estimated at 30 per cent by R. E. Robson. (*p*) Net use computed from a loss estimated at 45 per cent by Burton Smith. (*q*) Data from Duty of Water West Side of San Joaquin Valley, California, by R. E. Robson, San Francisco. (*x*) These crops irrigated; area not known.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.	P ct	P ct	P ct.
7-F	Modesto Irrigation Dist. (*a*) (*b*).....	6,800	13 00	.....	.....	1904	*x*	*x*	...	*x*	12 0	5 0	9 6	10 0	13 0	16 0	16 6	14 0	5 0	.....	.....	.....
		11,200	7 42	.....	.....	1905	*x*	*x*	...	*x*	3 0	12 0	5 0	17 0	17 0	20 0	20 0	5 0	1 0	.....	.....	.....
		15,100	6 93	...	.....	1906	*x*	*x*	...	*x*	...	...	3 0	14 0	17 0	19 0	22 0	10 0	10 0	5 0	..	....
		16,200	9 01	.....	.....	1907	*x*	*x*	...	*x*	2 1	6 6	3 4	11 1	15 9	19 2	21 2	13 1	6 7	0 1		0 6
		20,000	8 08	.....	...	1908	...	...	...	...	2 1	7 9	14 4	15 4	18 2	20 0	13 8	5 7	0 4		..	1 3
		23,500	6 85	...	.....	1909	73 7	13 4	...	12 9	7 2	3 8	6 1	16 4	19 1	19 1	20 0	6 1	1 7	0 3		...
		28,198	5 16	...	.....	1910	82 7	11 6	1 8	0 9	.	10 4	13 8	15 0	22 7	22 4	11 1	1 7	1 4	1 5		..
		34,957	5 30	...	.....	1911	87 2	10 9	1 1	0 8		1 7	9 8	16 5	19 3	19 1	19 2	11 1	2 1	0.9	0 3	..
		39,777	4 15	...	.	1912	86 4	10 7	2 1	0 8		c4 0	13 0	20 0	27 0	21 0	14 0	1 0				..
		48,289	4 35	...		1913	86 4	8 8	3 9	0 9	0 9	0 7	1 1	24 8	25 9	25 0	13 0	3 1	5 1	0 2	0 2	...
		52,381	4.11	*d*2 36	*yd*42 6	1914	84 6	8 3	5.9	1 0	4 2	7 7	11 7	11 5	17 4	18 7	17 2	11 3	0 5			...
		51,915	3 67	*e*2 63	*y*28 3	1915	80 1	8 5	7 6	3 8	0 7	3 1	15 0	16 4	19 2	21 5	19 4	3 3	0 9	0 5		...
		53,759	3 86	*e*2 65	*y*33 1	1916	69 3	8 1	12 2	10 4	.		2 6	17 1	26 4	25 6	23 0	4 7	0 3	0 1	0 2	...
		54,006	5 03	*e*3 02	*y*40 0	1917	58 2	8 5	3 9	*f*29 4		0.7	11 4	20 6	21 0	19 5	22 2	4 6	...	...	...	
		57,861	4 10			1918	44 8	9 4	25 6	*g*20 2			1 3	19 9	31 4	31 7	15 7		...			
		55,475	3.94	2 41	*y*38 9	1919	36 9	10 7	40 7	*h*11 7		0 2	6 0	26 8	31 8	33 4	1 8		...			
		58,773	...	.		1920	38 3	13 2	38 0	*i*10 5									...			
		58,659		.		1921	39 7	21 0	27 1	*i*11 9		4 6	16 1	22 0	25 7	24 0	6 2	1 4	...			
		6,895	12 08			*j*1904	...												...			
		7,876	10 55			*j*1905	...												...			
		12,685	8 25			*j*1906													...			
		14,020	10 42			*j*1907													...			
		18,504	8 07			*j*1908													...			
		22,136	7 28		...	*j*1909													...			
		28,197	5 15	.		*j*1910													...			
		34,956	5 02	.	.	*j*1911	...												...			
		39,777	4 15			*j*1912													...			
	Continued on next page.	48,269	4 18			*j*1913													...			

REMARKS—(*a*) Water diverted from the Tuolumne River to irrigate near Modesto. Water first run in 1903. (*b*) From 4th Bien. Rpt., State Dept. of Eng., Water Supply Papers, U. S. G. S., Nos. 299, 331, 361, 391, 411, 441, 461 and 481; records of Modesto Irrigation Dist.; reports by B. A. Etcheverry, Berkeley, J. D. Galloway and T. H. Means, San Francisco. (*c*) Water supply short. (*d*) From measurements and estimates on number of canals in district by K. A. Heron, Berkeley. (*e*) From measurements by T. H. Means, San Francisco, and B. A. Etcheverry, Berkeley, on parts of the system. (*f*) Rice, 0.1 per cent of total crops. (*g*) Rice, 1.3 per cent of total crops. (*h*) Rice, 2 per cent of total crops. (*i*) Rice, 2.6 per cent of total crops. (*j*) From rpt. to P. V. Long, City Attorney of San Francisco, by B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco. (*x*) These crops irrigated; areas unknown. (*y*) Includes loss from foothill reservoir.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees. Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 141.	Acres.	Feet.	Feet	P.ct.		P ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P ct.
7-F	Modesto Irrigation Dist. (*a*).....	52,381	4.10	....	.	1914	.....	.....	.....	.....	.....	.....	.....	.....	*	.....	.....	.....	.....	.....	.....	.....
		51,915	3.67	2.63	.....	1915	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		53,759	3.87	2.65	.....	1916	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		54,066	5.03	3.02	.....	1917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		57,861	4.20	2.48	.....	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		55,475	3.94	2.36	.....	1919	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-G	Patterson Water Co. (*b*) (*c*)	4,000	7.46	5.48	26.5	1913	87.5	12.5	.....	.....	1.0	5.5	11.9	10.4	13.5	12.2	13.8	13.8	11.8	5.7	0.4	.....
		6,000	4.30	2.90	32.5	1914	.....	.....	.....	100.0	.....	.....	.....	0.2	14.5	21.0	24.1	22.0	14.2	4.0	.....	.....
		7,250	3.49	2.76	20.9	1915	.....	.....	.....	100.0	.....	.....	.....	0.5	6.1	23.3	24.3	24.8	17.6	3.4	.....	.....
		8,500	3.64	2.95	18.9	1916	.....	.....	.....	100.0	.....	.....	.....	9.2	22.0	20.1	19.4	17.1	12.2	.....	.....	.....
		9,600	3.65	2.63	28.0	1917	.....	.....	.....	100.0	.....	.....	.....	9.8	18.6	18.6	19.9	17.0	15.4	0.7	.....	.....
		10,700	3.17	2.12	33.1	1918	.....	.....	.....	100.0	.....	2.4	.....	3.2	22.5	20.5	24.3	21.0	6.1	.....	.....	.....
		13,300	2.68	1.89	29.4	1919	81.2	5.9	12.2	0.7	.....	.....	.....	5.6	22.6	19.6	18.7	17.3	15.2	1.0	.....	.....
		15,250	2.42	1.77	26.8	1920	88.5	8.2	3.3	.....	..	5.6	2.0	5.6	19.1	19.2	18.2	15.8	14.5	....	....	....
7-G	Patterson pump (*d*).....	6,200	2.00	.	. .	1912	*x*	*x*	*x*	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-H	Turlock Irrigation Dist. (*e*) (*f*).....	3,757	12.78	....	..	1901	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		7,000	16.00	.....	....	1902	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		8,763	15.62	....	....	1903	.....	.....	.....	.....	.....	..	..	.....	.....	.....	.....	.....	.....	.....	.....	.....
		19,100	8.34	.	.	1904	*x*	*x*	.....	*x*	2.0	10.0	4.0	16.0	18.0	6.0	12.0	15.0	7.0	10.0	...	....
		21,000	6.25	....	..	1905	*x*	*x*	.....	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		32,578	6.30	..	.....	1906	*x*	*x*	.....	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	.....
		47,803	4.05	....	.. ..	1907	*x*	*x*	.....	*x*	...	0.4	1.4	5.1	17.8	20.5	21.7	21.2	10.0	1.9	...	.....
		49,871	4.11	.	....	1908	.....	.....	.....	.....	0.1	2.1	10.3	20.4	22.1	22.1	16.1	5.9	0.9	.....	...	.....
		51,940	4.59	.	....	1909	56.7	21.5	.....	21.8	2.0	3.0	5.0	13.0	20.0	19.0	23.0	8.0	3.0	4.0	...	.....
		64,798	2.17	.	....	1910	64.6	16.0	.....	19.4	....	6.0	16.0	23.0	11.0	8.0	26.0	5.0	5.0	.....	.....	.....
		71,106	4.25	....	...	1911	70.0	14.2	.....	15.8	....	.....	9.0	16.0	25.0	25.0	25.0	.	.....	.....	.....	.....
	Continued on next page.	79,916	3.13	.....	....	1912	.....	.....	.....	.....	....	*g*4.0	13.0	16.0	24.0	25.0	16.0	2.0	.....	.....	.....	.....

REMARKS—(*a*) From rpt. to P. V. Long, City Attorney of San Francisco, by B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco. (*b*) Water pumped from San Joaquin River to irrigate in vicinity of Patterson. (*c*) From private report by R. E. Robson to T. H. Means, San Francisco. (*d*) From 4th Bien. Rpt., State Dept. of Eng. (*e*) Water diverted from Tuolumne River to irrigate area southeast of Modesto. (*f*) From 4th Bien. Rpt., State Dept. of Eng.; W. S. Papers, U. S. G. S., Nos. 299, 331, 361, 391, 411, 441, 461 and 481; records of Turlock Irrigation Dist.; reports by J. D. Galloway and T. H. Means, San Francisco; B. A. Etcheverry, Berkeley; Burton Smith, Stockton; and A. J. Wiley, Boise, Idaho. (*g*) Water supply short. (*x*) These crops irrigated; areas unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of anoual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 142.	Acres.	Feet.	Feet.	P ct		P ct.	P.ct.	P ct.	P.ct.	P ct.	P ct	P ct	P ct.	P ct	P ct	P.ct	P ct	P.ct	P ct	P ct	P.ct.
7-H	Turlock Irrigation Dist. (*a*).....	85,062	3 57	.		*b*1913						4 6	10 2	20.2	23.1	22 1	13.3	6 5				
		94,000	2 25	.		*b*1914	73 2	8 5	8 3	10 0			6 8	24 2	34 0	25 8		5.9	2.7	0.6		
		95,698	3 60	*c*1 58	*f*56 1	*b*1915	68 0	8 3	12 1	11 6		2 0	13 3	14 1	21 5	21 1	24 0	3 8	0 2			
		89,049	4 51	*c*2 20	*f*51 2	*b*1916	58 1	8 4	19 6	13 9		0 2	1 1	15.2	22 2	21.6	21.8	16.5	1.4			
		97,257	4 35	*c*2 10	*f*51 7	*b*1917	42 4	6 9	27 5	23 2		0.4	5 3	20 6	19 8	19.9	20 6	13.2	0 2			
		101,235	3 23	1 33	*f*58 8	*b*1918	34 0	6 6	35 7	23.7		3 4	4.3	14 2	27 0	25 6	24 0	1 5				
		101,419	3 00	1 23	*f*59 0	*b*1919	30 5	7 1	37 5	24 9		1.0	4 0	23.0	29.0	29 0	14.0					
		103,407	3 65	1 60	*f*56.1	*b*1920	29 8	8.6	42 8	18 8												
		105,461	3 58	1 67	*f*53 4	*b*1921	31.3	12.6	38 6	17 5		1 0	9 0	22 2	27 6	24 2	14 0	2 0				
						*b*1921							*d*0 8	24 2	17.8	24 1	23.4	9 7				
		3,757	12 77			*c*1901																
		7,000	15 97			*c*1902																
		8,763	15 62			*c*1903																
		12,000	13.27			*c*1904																
		21,000	6 24			*c*1905																
		32,587	6 28			*c*1906	77 5	10 9		11 6												
		47,803	4 12			*c*1907	72 9	14 8		12 3												
		49,871	4 09			*c*1908	56.5	22 3	1 6	19 6												
		51,940	4 59			*c*1909	58 4	20 8	4 1	16 7												
		64,798	2 17			*c*1910																
		71,106	4 24			*c*1911																
		79,916	3 13			*c*1912																
		85,062	3 57	.		*c*1913																
		92,348	2 73			*c*1914																
		95,698	3 60	2.22		*c*1915																
		89,049	4 51	2.56		*c*1916																
		97,257	4 34	2 43		*c*1917																
		101,235	3.23	1 85		*c*1918																
		101,419	3 00	1 71		*c*1919																

Remarks—(*a*) Water diverted from Tuolumne River to irrigate area around Turlock. Water first run in 1901. (*b*) From 4th Bien. Rpt., State Dept. of Eng.; W. S. Papers, U. S. G. S., Nos. 299, 331, 361, 391, 411, 441, 461 and 481; records of Turlock Irrigation Dist.; rpts. by B. A. Etcheverry, Berkeley; T. H. Means and J. D. Galloway, San Francisco; Burton Smith, Stockton; and A. J. Wiley, Boise, Idaho. (*c*) Net use obtained from summation of irrigators' receipts. R. V. Meikle, Chief Eng., Turlock Irrigation Dist., believes more water was used from 1915 to 1921 than shown; probably close to 2 ft. (*d*) Net use. (*e*) From rpt. to P. V. Long, City Attorney of San Francisco, by B. A. Etcheverry, Berkeley, and T. H. Means, San Francisco. (*f*) Includes loss from foothill storage reservoir and waste back to river.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P ct	P ct	P ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P ct.
7-I	American Seedless Raisin Co. (*a*) (*b*)	800		0 83	*c*	1917		100 0						1 5	11 6	27 6	33 1	20 9	5 3			
		1,100		1 45	*c*	1918		100 0						2 4	18 4	27 6	21 4	25 0	10 2			
		1,100		1 05	*c*	1919		100 0					3 1	15 1	21 7	18 3	25 2	16 6				
		1,100		0 95	*c*	1920		100.0				2 5	4 2	12 6	20 3	20 9	25 5	14 0				
7-I	Crocker-Huffman Land and Water Co. (*d*) (*e*)	28,000	12 45			1912							14 0	22 0	26 0	22 0	10 0	3.0	2 0	1.0		
						1919	36 1	25 2	20.3	*f*18 4												
7-L	San Joaquin and Kings River Canal Co. (*g*)	145,405		1 64		*h*1907	40 4		8.0	51 6												
		170,957		1 93		*h*1908	35 8		11 0	53 2												
				*i*1.44		1909																
		88,177		1 57		*h*1911	78 1		21.9													
		163,350				*h*1912					4.0	5 0	11 0	15 0	18 0	19.0	17 0	8.0	3 0			
		61,737		*i*2.12		1913					2 9	3.2	5.1	13.9	16.3	16.3	16.3	8.1	6.4	1.9	3 7	5.9
		119 523				*h*1914					2 6	2 7	4 7	13.3	16 8	18.5	16.1	7 8	6 6	5 2	2 9	2 8
		117,253		*i*2.12		1915	*i*80.0			*i*20.0	2 6	2 7	4.7	13.3	16 8	18 5	16.1	7 8	6 6	5 2	2.9	2 8
		104,815				*h*1916					2 6	2.5	3 4	11.0	16 4	17 6	16.4	4 4	6 0	7.6	6.6	5.5
		104,900				*h*1917					2 8	2.4	4 3	10.0	16 7	17 8	16.3	10.5	6.7	5 2	3 9	3.4
		81,479				*h*1918					1.9	2 1	2 6	10.3	17.6	19.1	17 0	9 7	6.1	6.1	4 5	3.0
		106,258				*h*1919					2 1	2.2	2 8	10 5	16 7	19 5	18.1	9 8	5.6	5 6	4 2	2.9
		108,979				*h*1920					2 1	2.2	2 8	10.5	16 7	19 5	18.1	9.8	5.6	5.6	4 2	2.9
7-L	Miller and Lux Canal	55,700	2.46				23.3		6.7	70 0												
7-L	Farms in the vicinity of Mendota (*b*) (*j*)	*k*3,323		1.99	*c*	1917	12 3	1.2	86 5		6 1	6 4	3 8	12 6	12 6	12 4	11 7	12 4	8 5	4 3	5 4	3.8
		*l*3,588		2 01	*c*	1918	13.6	1.1	82 0	3.3	4 0	5 6	2 8	4 1	8 6	7 5	10 9	14 1	9 5	8.7	13 5	10 7
		*m*4,126		1.91	*c*	1919	12 1	4.1	76.1	7.7	4.3	5 9	7.8	9 7	12 3	13 1	9 5	10 4	8 4	6 5	7.5	4 6
		*n*4,934		2.28	*c*	1920	12.1	4.9	68 0	15.0	6.9	6.2	7 5	8 6	12.3	12.7	10 5	11.5	8 1	5 2	6 9	3.6
7-L	Brown Slough (*o*)														32.0	65.0	3.0					
7-L	Aliso Canal (*p*)	55,700	4.45			*q*1912	23.4		6.6	70.0					38.0	62.0						

REMARKS—(*a*) Water pumped from wells on property to irrigate near Livingston. (*b*) From private rpt. by R. E. Robson, to T. H. Means, San Francisco. (*c*) Losses negligible. (*d*) Water diverted from Merced River to irrigate in vicinity of Merced. (*e*) From 4th Bien. Rpt., State Dept. of Eng., and rpt. by J. D. Galloway, San Francisco. (*f*) Rice, 1.4 per cent of total crop. (*g*) Water diverted from San Joaquin River to irrigate northwest of Mendota. (*h*) From 4th Bien. Rpt., State Dept. of Eng. and An. Rpt. of company to State R. R. Comm. (*i*) From B. A. Etcheverry, Berkeley. (*j*) Water pumped from wells on property. (*k*) Tabulated average for 4 farms. (*l*) Tabulated average for 6 farms. (*m*) Tabulated average for 8 farms. (*n*) Tabulated average for 9 farms. (*o*) Irrigates area northeast of Mendota. (*p*) Water diverted from San Joaquin River to irrigate northeast of Mendota. (*q*) From 4th Bien. Rpt., State Dept. of Eng.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines.	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
7-L	Chowchilla Canal (*a*)	.....	.....	.....	.....	.....	.....	.....	.....	.....	5 0	3 0	5 0	10 0	22 0	29.0	15 0	7 0	4 0	...	.....	.....
7-L	Helm Canal (*b*)	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	...	1 0	11 0	22 0	22 0	23 0	11 0	10.0	....	.....	.....
7-M	Madera Canal and Irrigation Co. (*c*)(*d*)(*e*)	10,597	2 68	...	.	1912	....	.....	.....	.....	.....	...	22 0	24 0	26 0	16 0	3 0	3 0	3 0	3 0	.....	.....
		6,553	5.04	..		1914	.....	.....	.....	.....	...	1.0	23 6	35 1	21 0	15 5	3.7	0 1	.....	.....	.....	.....
		6,321	6 64	...	.	1915	.....	.....	.....	.....	1 3	5 6	18 1	23 5	23 5	21 4	6 3	0 3	...	...	.....	.....
		5,785	4 41	...	...	1916	....	.....	.....	...	3 9	2 0	7 8	28 9	31 7	18 7	7 0	.	...	...	.....	.....
		8,799	4 44		.....	1917	...	.....	.....	.....	3 9	4 8	5 7	29 4	31 2	12 6	4 8	0 1		0 7	2 9	3.9
		7,207	..	1 20	.	1918	...	.	.....	...	1 7	6 3	6 0	30 8	37 0	13 7	1 4	0.2	0 3	1 2	0 8	.....
		9,730	2 12	1 07	49 9	1919	...	.....	.....	.....	2 8	5 5	15 5	33 2	27 5	5 5	...	.....	.....	...	.....	.....
		10,663	..	1 26	...	1920	...	.....	.....	...	1 6	4 3	28 9	33 6	18 8	10 9	1 9	...	..	...	..	....
7-M	Blythe Canal, San Joaquin Valley (*d*)	8,000	3 08	. .	..	1912	...	...	...	*f*	...	...	...	...	...	.	..	...	...	.	...	...
7-M	East Side Canal (*d*) (*g*)	46,500	1 63	....	.	1912	4 8	0 4	2 2	92 6	.	3 0	10 0	9 0	37 0	28 0	6 0	4 6	3 0			.
7-M	Columbia Canal (*h*) (*d*)	.....	.....	.....	.....	1912	....	...	...	...	4 0	5 0	4 0	10 0	20 0	28 0	13 0	10 0	6 0			...
7-O	James pump, Fresno Slough (*d*)	4,402	0 58	....	....	1912	28 0	....	58 2	13 8	....	...	...		...	...	.....	.....	.....	.	.	....
7-O	James Irrigation Dist. (*b*)	...	....	. .	.....	1919	..	..	...	.	.	. .	..	...	65 8	34 2	...	....	.	...	..	....
7-P	Lone Tree Canal (*i*)	....	..	....	....	*j*1917	....	....	.	.	...		*k*1 1	16 0	20 5	17 9	21 3	17 6	2 0	..	...	....
		...	..	....	....	*j*1918	....	....	.	.		*k*0 3	1 0	16 4	28 4	30 4	19 5	4 ..		....	...	...
		....	....	....	....	*j*1919	....	....						*k*17 7	31 1	31 ..	15 7	3 9	.	..	....	.
		..		....	.	*j*1920	....	....	.	.		.	*k*9.3	15 6	23 7	21 5	21 1	7 8	.	....	.	.
7-P	Fresno Canal (*d*) (*m*)	*m*189,000	2 10	....	....	*n*1911	...	.	...	100 0	.	2 9	3 0	15 4	19 5	19 4	19 1	15 9	4 8	....	.....	...
		*m*189,000	1 64		....	1912	...	.	...	100 0	.	2 6	8 ..	12 5	23 1	23 8	19 2	7 8	2 0	....	.....	...
		*m*189,000	2 15	....	....	1913	...	.	...	100 0	..	2 7	5 2	17 6	20 3	19 5	17 7	11 5	5 5	....	....	
		*m*189,000	2 31	....	....	1914	....	.	.	100 0	....	0 3	11 8	15 2	18 6	18 3	18 9	13 9	3 0	....	....	
		*m*189,000	1 96	...	..	1915	...	...	...	100 0	...	0 7	9 1	17 9	16 8	20 1	21 9	10 1	3.1	...	.....	...
	Continued on next page.	*m*189,000	2 40	. .	. .	1916	.	...	.	100 0	...	0 6	5 4	15 8	19 2	18 9	18 9	15 2	6 0	..	.	....

REMARKS. (*a*) Water diverted from sloughs to irrigate northeast of Mendota. (*b*) Water diverted from San Joaquin River to irrigate north of Mendota. (*c*) Water diverted from Fresno River to irrigate in vicinity of Madera. (*d*) From 4th Bien. Rpt., State Dept. of Eng. (*e*) From An. Rpts. of company to State R. R. Comm. (*f*) Pasture land. (*g*) Water diverted from San Joaquin River to irrigate southwest of Merced. (*h*) From State Dept. of Pub. Wks., Div. of W. Rts. (*i*) Water diverted from Fresno Canal. (*j*) From rpt by W. L. Huber, San Francisco. (*k*) Stream flow deficient. (*l*) Water diverted from Kings River. (*m*) Estimated. (*n*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files, and rpts. by W. L. Huber and I. Teilman included in rpt. of T. H. Means, San Francisco.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
	Continued from page 145.	Acres.	Feet.	Feet.	P ct.		P.ct.	P ct.	P.ct.	P.ct.	P.ct	P ct	P ct.	P.ct.	P.ct	P.ct.	P.ct.	P.ct.	P ct.	P.ct	P.ct.	P.ct.
7-P	Fresno Canal (*a*) (*c*)	*b*189,000	2.33	.....	.....	1917	.....	.....	.....	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		.....	.....	.....	.....	1918	.....	.....	.....	.....	.....	0.1	2 5	18.0	24.7	25 4	19.4	6 6	2.9	0 4	.....	.....
		.....	.....	.....	.....	1919	.....	.....	.....	.....	.....	0.7	5.9	23.0	26.0	24.7	11.3	5 6	2.2	.....	.....	0.6
		.....	.....	.....	.....	1920	.....	.....	.....	.....	1.7	2 6	11.1	17.7	20.9	20.7	17.6	6.9	0.8	.....	.....	.....
7-P	Gould Canal (*a*) (*d*)	.....	.....	.....	.....	1918	.....	.....	.....	.....	.....	.....	0.6	17.0	29 2	32.2	17.3	1.5	2.2	.....	.....	.....
		.....	.....	.....	.....	1919	.....	.....	.....	.....	.....	.....	1 4	24 6	33.5	29 6	9 5	0.4	1 0	.....	.....	.....
		.....	.....	.....	.....	1920	.....	.....	.....	.....	.....	0 5	8.3	18.9	26.3	25.3	17.5	0.4	2 8	.....	.....	.....
7-P	Fresno-Gould Canal (*e*) (*f*)	202,000	2 43	.....	.....	1914	.....	.....	.....	.....	0 4	0.8	9.5	15 2	20 2	18.9	19 8	12.7	*g*2 5	.....	.....	.....
		213,000	1.90	.....	.....	1915	.....	.....	.....	.....	0.5	1.1	9 5	18 4	15 8	21 6	22 1	*g*8 4	*g*2 6	.....	.....	.....
		214,000	1 58	.....	.....	1916	.....	.....	.....	.....	.....	0 6	5 7	15 8	19.6	18.4	19 0	*g*15 2	*g*5.7	.....	.....	.....
		214,000	1 84	.....	.....	1917	.....	.....	.....	.....	.....	1.6	9.3	17 8	20 7	19 6	18.5	*g*10.3	*g*2 2	.....	.....	.....
		214,000	1.42	.....	....	1918	.....	55.4	.....	44 6	.....	.....	2.1	17.6	25.4	26 8	19.0	*g*5 6	*g*2.8	0 7	.....	.....
		.....	*b*1 47	.....	.....	1919	.....	55.4	.....	44 6	.....	0.5	5.0	23.5	27.7	25 8	11 0	4.5	2.0	.....	.....	.....
7-Q	Alta Irrigation Dist. (*a*)	.....	.....	.....	.....	*h*1910	.....	.....	.....	.....	0.3	6.3	15.6	21.0	24.4	18.5	5 7	.....	0.6	4.2	3.4	.....
		.....	.....	.....	.....	*h*1911	.....	.....	.....	.....	.....	0.9	3.8	13.1	22.5	24.1	24.0	.....	.....	10.3	1.3	.....
		.....	.....	.....	.....	*h*1912	.....	.....	.....	.....	.....	.....	.....	.....	38.8	51.3	.....	.....	.....	9.9	.....	.....
		.....	1.40	.....	.....	*h*1913	.....	.....	.....	.....	.....	.....	.....	6.4	42.8	23 6	.....	.....	.....	12.9	11.3	.....
		.....	2 61	.....	.....	*h*1914	.....	.....	.....	.....	.....	0.4	10.7	16 1	20 3	20.0	18 0	.....	3.8	10.3	0 4	.....
		.....	1 54	.....	.....	*h*1915	.....	.....	.....	.....	.....	.....	2.6	25.3	18.2	31.8	18 2	.....	.....	3.9	.....	.....
		.....	2 08	.....	.....	*h*1916	.....	.....	.....	.....	.....	1.2	7.4	28.2	35 0	28.2	.....	.....	.....	.....	.....	.....
		.....	1.66	.....	.....	*h*1917	.....	.....	.....	.....	.....	.....	.....	18 7	31.3	33.1	16.9	.....	.....	.....	.....	.....
		.....	1 63	.....	.....	*h*1918	.....	.....	.....	.....	.....	.....	3 0	16 7	31 5	33 3	3 0	.....	.....	12.5	.....	.....
		95,000	1.05	.....	.....	*h*1919	1.8	53.7	.....	44.5	.....	.....	.....	27 7	55 8	15.3	.....	.....	.....	.....	.....	1.2
		.....	.....	.....	.....	1920	.....	.....	.....	.....	.....	.....	1 0	7.6	38.3	36 0	0 1	.....	.....	11.1	5.9	.....
7-R	Consolidated Canal Co. (*a*) (*f*)	130,000	3.06	.....	.....	1914	.....	.....	.....	.....	4.9	3.6	10.4	17.6	21.0	18.3	18.6	5.6	.....	.....	.....	.....
		130,000	1.88	.....	.....	1915	.....	.....	.....	.....	.....	.....	8.5	22.3	23.9	28.8	16.5	.....	.....	.....	.....	.....
		130,000	2 22	.....	.....	1916	.....	.....	.....	.....	0.5	4 5	19 4	27.0	24 3	22 0	2 3	.....	.....	.....	.....	.....
		130,000	2.02	.....	.....	1917	.....	.....	.....	.....	.....	2.0	5.9	16.3	31.7	28.2	15 9	.....	.....	.....	.....	.....
		130,000	1.67	.....	.....	1918	.....	.....	.....	.....	.....	.....	6.5	20 8	33.7	33.6	5.4	.....	.....	.....	.....	.....
		125,800	1 32	.....	.....	1919	17.5	82 5	.....	.....	.....	.....	7.4	27 4	51.3	13.9	.....	.....	.....	.....	.....	.....
	Continued on next page.	130,000	1.68	.....	.....	1920	.....	.....	.....	.....	.....	.....	9.8	15 4	38 4	33 3	3 1	.....	.....	.....	.....	.....

REMARKS—(*a*) Water diverted from Kings River. (*b*) Estimated. (*c*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. and files; Rpts. by W. L. Huber and I. Teilman included in Rpt. of T. H. Means, San Francisco. (*d*) From Rpt. by W. L. Huber, San Francisco (*e*) Both divert water from Kings River. (*f*) From Rpts. by W. L. Huber, San Francisco, and Rpt. on Storage of Water on Kings River, 1920, by J. B. Lippincott, M. W. Enderlein and W. S. Post, Los Angeles. (*g*) Diversion limited by supply in river. (*h*) From Dept. Pub. Wks., Div. of Eng. and Irrig. files and Rpt. on Storage of Water on Kings River, 1920, as note *f*.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
	Continued from page 146.																					
7-R	Consolidated Canal Co. (*a*) (*b*)	130,000	1 82			1921						3.3	11 8	14 9	32 9	30 5	6 6					
7-R	Farms near Reedley (*c*)	821		1 34		1918	11.0	89.0						*x*	*x*	*x*	*x*	*x*	*x*			
7-R	Island No. 3, Consolidated and Les Emigrants Canals (*a*) (*e*)	129,700	*d*1 88																			
7-S	Emigrant Canal	1,200	1 56			*f*1918									9.9	90 1						
		1,200	1 38			*f*1919									84 8	15 2						
		1,800	1 50			*g*																
7-S	Island Canal, Laguna Irrigation Dist. (*f*)					1918							5 4	18 8	33 1	40 2	2 5					
						1919							3 6	13 5	60 0	22 1	0 8					
7-S	Bota Main Canal, Tranquillity Irrigation Dist.					1916								32 0	26 0	26 3	15.7					
						1917							17 9	9 9	45 3	26 9						
						1918								16 1	36 0	12 5	5 1					
						1919									66 5	33 5						
7-S	Peoples Ditch Co. (*a*) (*b*)	54,100	1 62			1913						2 6	13 1	13 5	33 3	17 2	11.4	8 9				
		60,000	2 60			1914					9 2	7.3	12 3	11 5	16 9	18 9	17 7	6 2				
		68,300	*e*1 58			1917					7 6	7 6	8 9	13 3	19 0	22 8	20 2	0 6				
		68,300	2 10			1918					5 7	5 7	6 1	8 0	14 1	15 5	9 4	2 1		8 5	13 7	10 9
		68,300				1919	24 6	23 2	9 8	42 1	9 8	8 0	9 1	12 6	18 8	12 8	7 0	0 9		5 8	4 7	10 5
						1920					6 9	6 8	8 6	9 4	16 1	15 3	9 4	2 6		1 6	11 4	11 9
7-S	"A" Canal, Laguna Irrigation Dist. (*f*)					1918					3 6	6.8	15 9	18 7	27 0	27 8	0 2					
						1919							8 2	17 5	46 4	24 2	3 7					
7-S	Grant Canal, Laguna Irrigation Dist. (*f*)					1918							7 6	20 7	32 2	30 2	4 0	2 8	2 5			
						1919						8 4	19 6	15 2	40 4	11.3	2 2	1 6	1 3			
7-S	Turner Riverdale Canal	14,760	1 23			*f*1918							5 1	14 3	39 0	34 4	4 1	1.7	1 4			
		14,760	1 46			1919						10 8	20 8	16 8	41 8	8 5	1 3					
7-S	Crescent Canal	12,820	0 76			*f*1919	47 6		21 2	28 2			1 0	2 4		82 0	14 6					

REMARKS——(*a*) Water diverted from Kings River. (*b*) From Rpt. on Storage of Water on Kings River, 1920, by J. B. Lippincott, M. W. Enderlein and W. S. Post, Los Angeles. (*c*) Use of water from Kings River, by Harry Barnes, 1918. (*d*) Mean for 7 years. (*e*) From applications by Goodfellow and Nares; Purcheau and Mitchell in State Dept. of Pub. Wks., Div. of W. Rts. files; and rpt. by Board of Engineers, Kings River Conservancy District. (*f*) From State Dept. of Pub. Wks., Div. of W. Rts. (*g*) From rpt. by Goodfellow and Nares. (*i*) Estimated. (*x*) Water used; areas unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct		P ct.	P ct.	P ct.	P.ct.	P ct	P.ct	P.ct	P.ct.	P ct	P.ct	P ct.	P ct	P ct	P ct	P.ct.	P.ct.
7-S	Stinson Canal (*a*)	*b*14,500	0 71	.....	.....	1918	.....	.....	.....	.....	...	...	.....	3.4	49 8	45 7	1 1	.....	...	.....	.....	.....
		*b*14,500	0 72	.....	.....	1919	.....	.....	100 0	.....	....	9 2	3 3	3 4	70 5	13 6	....	.....	.....	.....	.....	.....
7-S	Cuthbert-Burrel Canal (*a*)	1,140	3 13	.....	.....	1919	.....	.....	.....	100 0	...	...	.....	...	96.6	3 4	.....	.....	.....	.....	.....	.....
7-S	Last Chance Water Ditch Co. (*c*)	34,000	1 12	....	.....	*d*1913	.....	.....	.....	.....	..	..	3 6	17 9	41 0	25 0	12.5	...	....	.....	.....	.....
		34,000	3 00	....	.....	*d*1914	.....	.....	.....	.....	9 0	7.3	10 0	13 3	16 0	23 1	14 3	7 0	....	.....	.....	.....
		*e*34,370	*e* 1.38	.....	.....	1915	.....	.....	.....	.....	*e*4.9	5.3	7.3	22 6	17.5	20.3	19 4	....	2 7	.....	.....	.....
		34,000	1 59	.....	.....	*d*1917	.....	.....	.....	.....	...	...	13 4	22 8	26 7	19.7	17.0	0 4	....	...	.....	.....
		34,000	1 51	....	.....	*d*1918	.....	.....	.....	.....	...	0 7	7 2	16 9	29.2	26.6	7 8	....	....	...	4 5	7.1
		34,000	....	....	.....	*d*1919	37 0	45 9	6 2	10.9	9 8	16 4	21 8	17 1	21 9	3.0	3.6	0 2	....	....	....	3 2
		.....	.....	.....	.....	*d*1920	.....	.....	.....	.....	0 5	2 3	15 4	15 6	26.5	18.7	8 8	1 6	3 7	0 4	....	6.5
7-S	Big and Little Mill Race Canal (*c*)	6,440	2 65	.....	.....	*a*1918	.....	.....	.....	.....	...	...	3 5	10 5	27 2	35 3	5.0	3 2	3 4	11 9	....	.....
		6,440	2 76	.....	.....	*a*1919	21 0	.....	7 8	71.2	....	7.8	15.4	14 8	46 5	13 0	2.5	.....	.....	.....	.....	.....
		6,440	*f* 2 45	.....	.....	*g*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-S	Reed Canal (*a*)	2,980	2 12	....	.....	1918	.....	.....	.....	.....	...	..	6 9	12 2	26 6	32 8	8 6	2 6	1 1	1 9	0 9	6.4
		2,980	2 46	.....	.....	1919	.....	.....	.....	.....	....	7 1	18.1	15 9	43.3	15 5	0 1	.....	.....	.....	.....	.....
7-S	Liberty Canal (*c*)	8,340	1 22	.....	.....	*a*1919	.....	...	.....	100 0	....	5 5	1 7	1 2	81 5	10 1	....	.....	.....	.....	.....	.....
		8,340	*f* 1.16	.....	.....	*g*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-S	Laguna Irrigation Dist. (*c*)	28,680	*f* 1 73	.....	.....	*g*	.....	.....	.....	.....	...	...	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
7-S	Lake Lands Canal, Corcoran Irrigation Dist.	*b*2,440	2 82	.....	.....	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	22 6	2 1	....	.....	...	14 6	60.7
		*b*2,440	3 53	.....	.....	1919	.....	.....	.....	.....	24 2	14.0	.....	.....	57.6	4.2	.....	.....	.....	.....	.....	.....
7-S	Foothill Irrigation Dist. (*h*)	.....	.....	i1.9	.....	.....	*x*	*x*	*x*	*x*	....	....	....	*y*	*y*	*y*	*y*	*y*	*y*	.....	.....	.....
7-S	Lemoore Canal and Irrigation Co. (*c*) (*j*)	40,600	2 57	.....	.....	1940	.....	.....	.....	..	6 2	17 1	15 6	17 5	17 1	8 2	4 7	3 5	...	...	10.1	
		40,600	2.56	.....	.....	1941	.....	.....	.....	.....	13.3	5 1	4 3	9.8	16.0	13 3	19 5	11 7	7.0	.....	.....	.....

Continued on next page.

TABLE 8.

REMARKS—(*a*) From State Dept. of Pub. Wks., Div. of W. Rts. (*b*) Estimated. (*c*) Water diverted from Kings River. (*d*) From Rpt. of Storage on Kings River, 1920, by J. B. Lippincott, M. W. Enderlein and W. S. Post, Los Angeles. (*e*) From State Water Commission. (*f*) Mean for 2 years. (*g*) From applications of Goodfellow and Nares; Purcheau and Mitchell in State Dept. of Pub. Wks., Div. of W. Rts. (*h*) Use of Water from Kings River by Harry Barnes, 1918. (*i*) Av. present use of District. (*j*) From Rpt. by S. C. Whipple to State Eng., Rpt. of Storage on Kings River, 1920, by J. B. Lippincott M. W. Enderlein and W. S. Post, Los Angeles, and rpt. of T. H. Means, San Francisco. (*x*) These crops irrigated; areas unknown. (*y*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct.		P.ct.	P ct.	P ct.	P.ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P.ct	P.ct.	P ct	P.ct.
	Continued from page 148.																					
7-S	Lemoore Canal and Irrigation Co. (*a*) (*b*)	40,600	1 89	.	.	1912	...	.			8.5	4 8	6 9	6 9	16 9	26 4	7 9	7 1	7 4	3 2	...	3.7
		40,600	1 54	....	.	1913	.	.	.	.	13 6	9 8	13 6	15 6	29 2	16 2	2 0	.	.	.	.	.
		40,000	2.64	. .	. .	1918	30 0	25 0	25 0	20 0	4 6	6 8	6 8	9 4	14 4	19 6	6 7	5 3	6 1	8 7	5 3	6 6
		40,000	2 65	. . .	..	1919	30 0	25 0	25 0	20 0	6 6	11 7	16 2	11 7	23 5	12 8	4 2	3 2	2 2	1 2	3 2	4 1
		.....	..	...	. . .	1920	...	.	....	..	4 5	4 8	9 2	11 3	19 3	19 7	7 0	4 6	4 9	3 5	1 9	9 3
7-T	Peoples Consolidated Ditch (*c*).....	14,569	3.3	. . .	. . . .	1917					.	.		21 2	28 4	34 5	12 5	3 7	.		..	. . .
		14,569	3 2	...		1920	28 0	30 1	29 4	12 2	.	.	12 8	16 3	34 6	24 9	9 4	2 0	.		..	. .
		14,569	3 3	. . .	. . . .	1921	..	....	..		5 7	8 9	11 0	15 5	20 4	20 8	7 2	2 2	1 5		1 8	4 0
7-T	Farmers' Ditch (*c*).....	7,365	3 3		.	1917					..	..		22 4	31 4	33 6	9 2	0 1				..
		7,365	3 6		.	1920	38 7	18 7	38 6	4 0	.	.	6 3	27 4	38 7	27 3	0 7	.				. .
		7,365	2 7			1921	.	.	.	.	0 5	0 2	7 7	14 7	37 6	37 0	2 2				0 1	. .
7-T	Evans Ditch (*c*)	....	1 7			1917					.	....		23 6	35 7	27 1	17 1	6 2	.	....	..	....
		....	1 4		.	1920	32 9	16 5	19 7	0 9	.	.	17 9	19 5	24 9	20 4	16 3	1 3	.	.	.	.
		.	2 3	.		1921	.	.	..	....	9 0	10 0	15 0	10 8	15 0	14 5	15 9	1 3	.	.	3 0	5 5
7-T	Fleming Ditch (*c*).....	1,014	2 6		.	1917	.				..	..	.	22 6	26 4	22 6	17 1	11 3		.	.	.
		1,014	2 7			1920	36 6	16 3	8 3	11 8	.	.	8 6	26 2	27 4	20 9	16 2	0 7				
		1,014	3 5	..		1921	.	.	.	.	7 9	3 9	2 3	14 2	22 6	18 4	22 2	2 0	. .	0 2	0 3	6 0
7-T	Persian Ditch (*c*).....	....	1 7			1917					..	..		22 6	30 0	25 2	17 3	4 3	.	....	....	....
		.....	1 4	. . .		1920	32 9	16 5	19 7	0 9	.	.	2 9	26 4	33 2	30 6	7 2	.	.	.	.	.
		.....	2 3	.		1921	..	..	.	.	7 8	11 1	12 0	7 3	22 6	23 2	7 3	....	....	0 2	7 4	1.1
7-T	Oakes Ditch (*c*).....	1,022	2 6			1917					.	....		23 1	28 8	25 0	15 4	7 7	....	.....	.....	.....
		1,022	2 9		.	1920	21 1	23 2	28 1	27 6	.	.	1 5	14 7	40 2	26 5	16 6	0 5	....	....	....	.
		1,022	3 0	.....	.	1921	.	....	....	.	7 3	9 3	11 5	18 8	20 2	16 1	13 0	0 8	..	.	....	..
7-T	Tulare Irrigation Co. (*c*)..... ..	3,284	4 3	.....	...	1917	....	....	....	....	....	....		23 3	33 3	26 6	16 8	....	....	....	....	.....
		3,284	2 9	.....	.	1920	48 1	28 7	8 5	14 4	.	.	3 5	19 0	37 9	35 2	4 1	....	....	.....	.....	.....
		3,284	3.9	.....		1921	.	.	.	.			20 7	18 3	27 7	28 8	4 5	.	..	.....	.....	.....

Remarks—(*a*) Water diverted from Kings River. (*b*) From rpt. by S. C. Whipple to State Eng., rpt. of T. H. Means, San Francisco, and rpt. on Storage of Water on Kings River, 1920, by J. B. Lippincott, M. W. Enderlein and W. S. Post, Los Angeles. (*c*) From Water Resources of Tulare County and their Utilization, by S. T. Harding, 1922, State Dept. of Pub. Wks., Div. of Eng. and Irrig.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees. Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct.		P.ct.	P.ct.	P.ct.	P.ct.	P ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
7-T	Tulare Irrigation Dist. (a)	12,199	5 1	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	19 5	41 4	35 4	3 7	.....	.....	.....	.....	.....
		12,199	2 8	.....	.....	1920	64 8	4 9	23 2	7 1	.....	.....	3 6	12 3	49 1	35 0	.....	.....	.....	.....	.....	.....
		12,199	2 8	.....	.....	1921	.....	.....	.....	.....	.....	.....	1 7	5 2	46 6	45 8	0 7	.....	.....	.....	.....	.....
7-T	Packwood Ditch (a)	3,000	5 5	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	5 6	41 8	52 0	0 6	.....	.....	.....	.....	.....
		3,000	2 2	.....	.....	1920	48 9	17 9	30 6	2 6	.....	.....	11 6	50 0	38 4	.....	.....	.....	.....	.....	.....	.....
		3,000	2 3	.....	.....	1921	.....	.....	.....	.....	.....	.....	.....	.....	41 5	58 5	.....	.....	.....	.....	.....	.....
7-T	Lakeside Ditch (a)	19,750	1 9	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	24 4	32 7	34 0	8 9	.....	.....	.....	.....	.....
		19,750	2 3	.....	.....	1920	55 7	1 7	32 2	10 4	.....	.....	3 2	21 2	43 4	31 2	1 0	.....	.....	.....	.....	.....
		19,750	2 8	.....	.....	1921	.....	.....	.....	.....	0 4	2 7	16 1	12 9	35 4	30 3	2 2	.....	.....	.....	.....	.....
7-T	Goshen's Ditch (a)	1,867	1 3	.....	.....	1920	38 6	.....	29 2	32 2	.....	.....	.....	28 0	44 0	28 0	.....	.....	.....	.....	.....	.....
		1,867	1 6	.....	.....	1921	.....	.....	.....	.....	.....	.....	.....	50 0	50 0	.....	.....	.....	.....	.....	.....	.....
7-T	Sweeney Ditch (a)	.....	.....	.....	.....	1921	.....	.....	.....	.....	.....	.....	.....	26 7	27 8	27 8	17 7	.....	.....	.....	.....	.....
7-T	Hamilton Ditch (a)	.....	.....	.....	.....	1921	.....	.....	.....	.....	13 0	11 1	13 0	13 4	13 9	13 9	13 5	8 2	.....	.....	.....	.....
7-T	Wutchumna-Barton Cut (a)	.....	.....	.....	.....	1921	.....	.....	.....	.....	.....	.....	.....	19 0	38 0	38 0	5 0	.....	.....	.....	.....	.....
7-T	Wutchumna Ditch (a)	7,446	.....	.....	.....	1920	11 8	75 3	10 9	2 0	.....	.....	14 0	19 8	23 2	27 4	11 7	3 9	.....	.....	.....	.....
		7,446	.....	.....	.....	1921	.....	.....	.....	.....	0 2	3 3	9 8	22 3	24 2	20 3	9 2	1 6	0 3	7 6	1 2	.....
7-T	Area irrigated by Kaweah River (a)	175,000	2 3	.....	.....	1921	28 5	34 4	14 8	22 3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-T	Jenning's Ditch (a)	630	4 1	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	26 9	26 9	26 9	19 3	.....	.....	.....	.....	.....
		630	7 4	.....	.....	1920	47 7	15 8	36 5	.....	.....	.....	4 1	22 6	29 9	29 9	13 5	.....	.....	.....	.....	.....
		630	7 8	.....	.....	1921	.....	.....	.....	.....	.....	1 2	15 1	19 7	25 5	28 4	10 1	.....	.....	.....	.....	.....
7-T	Mathews Ditch (a)	928	5 1	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	21 3	25 6	23 4	24 5	5 2	.....	.....	.....	.....
		928	6 3	.....	.....	1920	74 5	1 5	20 7	3 3	.....	.....	17 3	20 6	24 9	22 6	14 6	.....	.....	.....	.....	.....
		928	6 1	.....	.....	1921	.....	.....	.....	.....	5 9	9 0	13 8	17 2	20 8	19 9	11 9	.....	.....	.....	.....	1 5
7-T	Modoc Ditch (a)	3,590	2 7	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	28 3	26 7	25 1	19 9	.....	.....	.....	.....	.....

Continued on next page.

REMARKS—(a) From Water Resources of Tulare County and their Utilization, by S. T. Harding, 1922, State Dept. of Pub. Wks., Div. of Eng. and Irrig.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 150.	Acres.	Feet.	Feet.	P ct		P ct.	P.ct.	P ct.	P.ct.	P.ct	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct.	P.ct	P.ct.	P.ct.	P.ct.
7-T	Modoc Ditch (*a*)	3,590	2 80	.....	.....	1920	55 7	2 3	23 7	18 3	....	...	12 3	26 7	29 4	22 0	9 6	....	....	.....	.....	.....
		3,590	2 80	.....	....	1921	....	.....	.....	.....	....	...	12 2	26 7	29 4	22 0	9 7	....	....	.....	.....	.....
7-T	Uphill Ditch (*a*)	1,873	2 70	...	...	1917	...	...	...	...	....	...	...	29 4	21 6	27 4	21 6	....	....	.....	.....	....
		1,873	2 40	...	...	1920	61 3	6 6	5 7	26 4	....	..	4 8	22 0	36 4	27 8	9 0	....	....	.....	.....	.....
		1,873	2 90	...	.....	1921	.....	.....	.....	...	....	4 5	16 4	21 0	24 4	27 1	6 3	....	....	.....	.....	.....
7-U	Land irrigated from Tule River	1,610	.....	2 20	.....	*f*1901	15 8	78 2	.....	6 0	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*b*60,901	2 20	....	.....	*a*1921	33 8	32.1	.	34 1	...	...	...	...	....	...	....	...	...	.....	.....	.....
		*c*20,581	2 90	...	.....	*a*1921	100 0	.	.	...	...	..	..	..	....	....	....	....	....	.....	.....	.....
		*d*19,522	2 50	...	.	*a*1921		100 0	.	.	....	...	...	...	....	....	....	....	....	.....	.....	.....
		*e*20,795	1 20	.	...	*a*1921	....	..	....	100 0	..	...	...	...	....	....	....	....	....	.....	.....	.....
7-U	Pioneer Ditch (*a*).	3,012	1 10	...	...	1920			...	...	6 0	7 0	1 0	5 0	30 0	19 0	15 0	4 0	9 0	5 0	1 0	....
		3,012	0 80	.....	...	1921	8 9	82 1	....	9 0	....	....	....	....	....	....	....	....	....	....	....	....
7-U	Burton Ditch (*a*)	114	2 60	.....	.....	1921	21 9	11 4	....	66 7	..	...	...	...	...	...	....	....	....	.....	.....	....
7-U	Poplar Ditch (*a*)	3,192	4 40	.....	.....	1921	40 6	18 3	....	41 1	12 8	15 9	10 2	14 9	21 1	18 6	....	....	....	....	....	6.5
7-U	Stockton Ditch (*a*)	844	2 30	....	.....	1921	47 3	11 7	.	41 0	....	..	..	....	....	....	....	....	....	.....	.....	....
7-W	Alpaugh Irrigation Dist., Kern County.	*g*4,000	3 84	2 00	47 9	1919	...	....	....		...	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
7-W	Lands irrigated from White River (*a*)	*b*11,575	2 30	.	...	1921	11 6	52 9	....	35 5	....	....	....	....	....	....	....	....	....	.....	....	....
		*c*1,348	3 70	.	.	1921	100 0	.	.....	.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*d*6,119	2 30	..	.	1921	...	100 0	.....	.....	....	....	....	....	....	....	....	....	....	.....	.....	.....
		*e*4,108	2 00	.	...	1921	...	.....	....	100 0	....	....	....	....	....	....	....	....	....	.....	.....	.....
7-W	Lands irrigated from Deer Creek (*a*)	*b*15,417	2 30	....	.....	1921	17 0	63 4	..	19 6	....	....	....	....	....	....	....	....	....	.....	.....	.....
		*c*1,941	1 30	...	.....	1921	....	.	....	100 0	....	....	....	....	....	....	....	....	....	.....	.....	.....
		*d*9,787	1 90	..	.	1921	.	100 0	.....	.	....	....	....	....	....	....	....	....	....	.....	.....	.....
		*e*2,629	3 60			1921	100 0	.														

REMARKS—(*a*) From Water Resources of Tulare County and their Utilization, by S. T. Harding, 1922, State Dept. of Pub. Wks., Div. of Eng. and Irrig. (*b*) This acreage includes (*c*) (*d*) and (*e*). (*f*) From 4th Bien. Rpt., State Dept. of Eng. (*g*) From 14th U. S. Census, 1920. (*x*) Water used; quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.	P.ct	P.ct.	P.ct.	P.ct.
7-X	Callaway Canal (*a*) (*b*)	c50,000	4 20	.....	.....	1906	*x*	.....	*x*	*x*	1.0	.....	6 0	22 0	23 0	17 0	16 0	7.0	4 0	3 0	1 0	.....
		51,224	.....	.....	.....	1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		44,200	3 60	2 94	18.3	1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		24,000	3 81	3 06	19 5	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		8,700	4 18	2 65	36.8	1913	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		56,000	3 61	3 00	16 7	1914	.....	.....	.....	.....	0 4	2 3	18 1	18 9	22 4	20 8	10 9	5 1	0 4	0 7	.....	.....
		38,600	3 63	3 08	15.2	1915	.....	.....	.....	.....	.....	.....	0 9	20 2	26 0	31 8	20 4	0 7	.....	.....	.....	.....
		52,400	3 56	3 02	15.3	1916	.....	.....	.....	.....	.....	1 8	5 1	21 6	25 5	21 2	10 6	5 2	3 9	2 5	1 9	0 7
		46,000	3 61	3.18	12 0	1917	.....	.....	.....	.....	.....	2 2	10 1	25 2	22 4	20 8	12 2	6 6	0 2	0 2	.....	0.1
		24,400	3 79	2 93	22 8	1918	.....	.....	.....	.....	.....	.....	16.6	26 4	13 9	37 5	3.4	.....	.....	2.2	.....	.....
		18,600	3 91	3 03	22 6	1919	81 0	3 1	14 5	1 4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		24,800	3 79	2 70	28 6	1920	45 0	4 6	14.1	36 3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-X	Lerdo Canal (*b*) (*d*)	c5,000	2 75	.....	.....	1906	*x*	.....	*x*	*x*	.....	.....	18 0	6.0	27.0	22 0	18 0	6 0	3 0	.....	.....	.....
		5,300	3 56	2 35	33 9	1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		5,100	3 62	2 22	38 8	1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,000	5 10	3 22	36 9	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,000	6 00	4 14	31 0	1913	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		4,500	3 78	3 36	11 0	1914	.....	.....	.....	.....	2 1	20 6	6.6	16.7	25 4	11 5	16.5	0 6	.....	.....	.....	.....
		2,450	4.75	4 25	10 6	1915	.....	.....	.....	.....	.....	10 9	.....	17 2	27 2	27 7	17 0	.....	.....	.....	.....	.....
		5,900	3 38	2 14	36 6	1916	.....	.....	.....	.....	.....	15 1	2 4	10 7	15 4	33 9	14 6	7 8	0 1	.....	.....	.....
		6,900	3 18	2 62	14 4	1917	.....	.....	.....	.....	.....	8 9	20 2	20.4	23 6	19 1	2 7	5 1	.....	.....	.....	.....
		1,750	5 22	3 67	29.7	1918	.....	.....	.....	.....	.....	8 0	41.4	.....	23 9	9 9	.....	.....	.....	.....	.....	16.8
		3,050	4 41	3 31	24 9	1919	14 4	16 9	68 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,500	5 35	3 54	34.1	1920	61.3	37.3	1 4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-Y	Anderson Canal (*b*) (*e*)	c2,000	9 11	.....	.....	1906	*x*	.....	*x*	*x*	6.0	3.0	8.0	12.0	14.0	6 0	7.0	12 0	13.0	9 0	8.0	2.0
		1,950	.....	.....	.....	1910	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1913	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1914	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1915	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Continued on next page.	1,950	.....	.....	.....	1916	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) Water diverted from Kern River. In priority 13th, above "Second Point." (*b*) From 4th Bien. Rpt., State Dept. of Eng. and original notes for Bull. 9, State Dept., of Eng. by S. T. Harding, 1921. (*c*) Estimated. (*d*) Water diverted from Kern River through Beardsley Canal. (*e*) Water diverted from Kern River. In priority 4th, above "Second Point." (*x*) These crops irrigated; quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P.ct.	P ct.	P.ct.	P ct.	P.ct.	P.ct	P.ct	P ct	P ct	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P ct	P ct.
	Continued from page 152.																					
7-Y	Anderson Canal (*a*) (*b*)	1,950	.....	.....	.....	1917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,950	.....	.....	.....	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,730	.....	.....	.....	1919	13.1	.....	19 0	67 9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2,380	4 80	2 73	43 1	1920	26 3	.....	11.7	62 0	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-Y	Farmers Canal (*a*) (*b*)	c5,000	5 50	.....	.....	1906	*x*	...	*x*	*x*	10 0	5 0	4 0	7 0	11 0	10 0	9 0	9 0	6 0	10 0	11 0	8 0
		7,000	7 96	.....	...	1909	*x*	....	*x*	*x*	8 0	6 0	7.0	11 0	13 0	17 0	12 0	7 0	5 0	9 0	3 0	2 0
		5,066	....	....	....	1910	...	....	....	....	...	...	...	...	...	...	...	...	...	.....	.....	.....
		6,560	....	...	....	1911	..	..	..	..	...	..	...	...	...	...	...	...	...	...	...	....
		5,720	....	..	..	1912	..	..	....	..	...	..	...	...	...	...	...	...	...	...	...	...
		6,960	..			1913	..		....	..	...	..	...	...	...	...	...	...	...	...	...	...
		4,800	4 20	2 50	40 4	1914	...		..	..			12 0	22 0	14 0	16 2	5 1	4 9	5 5	12 1	3 2	4 0
		5,400	2 20	1 90	12 8	1915	..			.	13 1	3 9	2 1	19 8	2 4	19 2	14 3	7 3	1 3	9 1	8 1	7 8
		5,300	2 70	2 40	10 5	1916	..			.	8 9	0 3	29 7	15 0	8 0	11 3	8 3	5 0	4 8	5 0	3 0	9 0
		4,900	4 60	2 30	50 1	1917	...			.	7 8	5 0	14 7	7 1	6 6	15 7	14	6 4	5 8	5 8	2 4	11 1
		4,810	4 10	2 00	53 7	1918					15 9	7 8	2 1	6 4	14 7	17 7	7 9	2 7	1 6	13 3	5 3	1 6
		6,880	2 67	1 52	42 9	1919	14 4	1 5	11 6	22 3												
		5,322	4 50	1 90	57 7	1920	28 8	0 4	46 9	14 5												
7-Y	Castro Canal (*b*) (*d*)	c1,200	1 91			1906	*x*		*x*	*x*	3 0	4 0	3 0	12 0	8 0	10 0	11 0	11 0	12 0	11 0	11 0	1 0
		c1,200	c3 00			1910																
7-Y	Beardsley Canal (*d*) (*f*)	e8,000	5 1			1906	*x*		*x*	*x*	4 0		6 0	13 0	11 0	18 0	13 0	21 0	8 0	6 0		
		98,465				1910																
		98,245				1911																
		97,995				1912																
		7,604				1913																
		8,600	5 77	4 61	20 1	1914					1 1	11 1	7 0	14 3	15 5	11 7	11 7	11 6	2 7	3 7		0 5
		6,800	4 65	3 28	29 4	1915					0 6	2 4	4 5	17 1	11 0	33 3	26 2	1 4				0 4
		9,100	6 21	4 21	32 2	1916		..	.	.	0 6	6 0	11 0	19 2	11 7	16 7	13 5	9 2	6 2	0 7		1 6
		7,900	5 35	3 76	29 6	1917		.			1 3	11 8	15 3	17 7	17 1	14 1	11 1	11 0				
		6,300	1 36	2 67	58 9	1918						6 3	13 3	8 0	19 3	31 3				6 9	..	11 9
		6,300	4 35	2 82	34 9	1919	58 9	5 7	26 8	8 6												
		7,741	3.97	2 65	33 3	1920	66 5	5 6	19 9	8 0												

REMARKS: (*a*) Water diverted from Kern River, in priority 8th, above "Second Point." (*b*) From 4th Biem. Rpt., State Dept. of Eng., and original notes for Bull. 9, State Dept. of Eng., by S. T. Harding, 1921. (*c*) Water diverted from Kern River, in priority 6th, above "Second Point." (*d*) Water diverted from Kings River, priority undefined. (*e*) Estimated. (*f*) Water diverted from Kern River, in priority 10th and 11th, above "Second Point." (*g*) Figures excessive. (*x*) These crops irrigated; area unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct.	P ct.	P ct	P.ct.	P.ct.	P.ct.	P ct	P.ct.	P.ct.	P.ct.
7-Y	East Side Canal (*a*) (*b*).....	.....	.....	.....	.....	1896	.....	.....	.....	.....	0.1	1 0	12 4	23 2	17 0	17 0	17 6	9 9	1 8	.....	.....	.....
		.....	.....	.....	.....	1897	.....	.....	.....	.....	.....	.....	5.7	28 2	22 6	19 1	8 7	7 6	5 5	4 6	.....	.....
		.....	.....	.....	.....	1898	.....	.....	.....	.....	9 1	.....	14 0	24.5	15 7	21 4	5.0	.....	3.1	7.2	.....	.....
		.....	.....	.....	.....	1899	.....	.....	.....	.....	.....	9 5	11 4	22.9	5.9	32 3	.....	.....	.....	.....	4.4	13.6
		.....	.....	.....	.....	1900	.....	.....	.....	.....	.....	1.9	31.3	11.9	6 3	29.6	13 9	.....	.....	.....	.....	5 1
		.....	.....	.....	.....	1901	.....	.....	.....	.....	0.2	4.9	17.9	6 8	13.4	16 1	17.3	15.1	8.3	.....	.....	.....
		.....	.....	.....	.....	1902	.....	.....	.....	.....	.....	0.8	18 2	12.5	10 1	25 9	17.5	14 0	1 0	.....	.....	.....
		.....	.....	.....	.....	1903	.....	.....	.....	.....	.....	.....	12.1	19.8	8.3	31 6	23 2	5 0	.....	.....	.....	.....
		.....	.....	.....	.....	1904	.....	.....	.....	.....	.....	4 4	20.2	6 1	13 8	9.1	7.9	23.9	14 6	.....	.....	.....
		.....	.....	.....	.....	1905	.....	.....	.....	.....	.....	.....	7.0	18.0	16 5	26.0	21.3	11.2	.....	.....	.....	.....
		*c*6,000	5.98	.....	.....	1906	*x*	.....	.....	*x*	.....	0.8	.....	10 4	19.8	13 2	18 7	18 8	8 0	6.2	4 1	.....
		5,759	5 40	.....	.....	1909	*x*	.....	*x*	*x*	.....	.....	.....	10 8	21.3	15.7	18.9	18.5	9 6	5.2	.....	.....
		5,759	4.87	.....	.....	1910	.....	.....	.....	.....	.....	.....	10.3	13.6	21.3	12 9	19.5	1 3	9 8	.....	.....	11.3
		5,796	5.45	.....	.....	1911	.....	.....	.....	.....	.....	.....	1.7	15 7	17.6	14 0	18 0	13.4	6.6	.....	.....	13.0
		5,973	3 21	.....	.....	1912	.....	.....	.....	.....	0 4	.....	8 4	23 7	21 0	21 4	21 7	3 4	.....	.....	.....	.....
		5,918	4 07	.....	.....	1913	.....	.....	.....	.....	.....	12 1	12 0	3.1	18 2	22 8	.....	20.9	10 9	.....	.....	.....
		6,135	4.80	3 80	21 5	1914	.....	.....	.....	.....	.....	.....	7.5	17 8	16 4	15 6	20 1	11 1	11.5	.....	.....	.....
		6,110	3 60	2 70	25 5	1915	.....	.....	.....	.....	.....	.....	2.5	22 1	11.1	23 6	27 0	13.7	.....	.....	.....	.....
		5,935	5.60	4 00	28.7	1916	.....	.....	.....	.....	.....	.....	10.9	15 8	15.3	15 0	17 1	17 0	8 9	.....	.....	.....
		5,955	4.80	3 50	27 3	1917	.....	.....	.....	.....	.....	.....	11.6	16 6	21.5	20.0	21 9	1.1	7.4	.....	.....	.....
		5,939	3 90	2 30	40 9	1918	.....	.....	.....	.....	.....	.....	.....	19 6	22 8	27 6	18 6	0 8	4.3	6 3	.....	.....
		6,005	4 10	2 55	37 5	1919	57 1	1 6	40.2	1.1	2 5	1.2	0.6	27 0	20 6	25.1	22 6	.....	.....	.....	.....	.....
		5,408	4.66	2 77	40 5	1920	49.2	2 4	27.6	20.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-Y	Kern Island Canal (*d*) (*b*).....	.....	.....	.....	.....	1896	.....	.....	.....	.....	1 0	4 6	18.0	11 5	13.9	13.0	9 6	6 4	3 3	2 9	1 5	14.3
		.....	.....	.....	.....	1897	.....	.....	.....	.....	7.8	4 6	4.3	17.4	18 2	10 4	5 8	4 3	2 9	5 6	7 8	10.9
		.....	.....	.....	.....	1898	.....	.....	.....	.....	9 1	7 0	11 6	12 4	7 6	11.0	10 3	6 2	2 2	3.2	8 2	11.2
		.....	.....	.....	.....	1899	.....	.....	.....	.....	5 8	10 8	14 9	15 2	8 4	10 4	7 9	4 5	3.3	4.3	8 6	5 9
		.....	.....	.....	.....	1900	.....	.....	.....	.....	2 0	10 0	14 5	11 9	7.7	10 8	9 9	5.4	8 8	8 6	7.5	2.9
		.....	.....	.....	.....	1901	.....	.....	.....	.....	3 6	5 6	12 6	14 5	14 1	9 7	7.9	4 6	3.3	3.3	5.3	15 5
		.....	.....	.....	.....	1902	.....	.....	.....	.....	16 9	4 6	2 9	8 8	11 5	8.9	10 7	5.5	8 0	11 7	5 2	5.3
		.....	.....	.....	.....	1903	.....	.....	.....	.....	3 3	6.3	9 6	10 6	16.8	13 6	8 7	6.6	4 9	0 8	10 6	8.2
		.....	.....	.....	.....	1904	.....	.....	.....	.....	5.9	10 2	3 3	11 6	14 2	15 7	11 6	6.3	3.9	3 2	9 0	5 1
	Continued on next page.	.....	.....	.....	.....	1905	.....	.....	.....	.....	8 1	4.0	8 7	13 5	12.2	13 1	9.4	9.1	5.6	7.1	7.2	2.0

REMARKS—(*a*) Water diverted from Kern River. (*b*) From original notes for Bull. 9, State Dept. of Eng., by S. T. Harding, 1921 (*c*) Estimated. (*d*) Water diverted from Kern River, in priority 15th, above "Second Point." Diversion supplemented by pumping, which increases the percentage of use in June to September, inclusive, and reduces it in other months. (*x*) These crops irrigated; quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.	P ct.
	Continued from page 154.																					
7-Y	Kern Island Canal (a) (b)					1906	x			x	5 8	8 6	4 1	10 1	12 7	13 1	10 2	8 9	7 4	5 9	4 3	8 8
		35,037				1910					0.7	5 7	11 7	6 1	13 1	11 8	9 1	8 1	6 3	9 6	11 1	3.1
		35,978				1911						0 8	9 8	11 9	12 8	8 9	8 5	8 5	8 6	10 1	10 0	9 8
		35,781				1912					2 1	2 8	6 2	5 1	10 2	13 7	11 7	10 1	7 1	7 6	10 6	12 8
		36,589				1913					3 0	0 9	7 0	15 4	11 1	13 8	9 9	8 8	6 5	5 7	9 6	12 6
		33,170	2 10	1 90	23 6	1914					1 9		1 9	11 2	17 5	17 3	10 1	9 8	6 3	8 9	9 1	5 2
		33,710	2 60	1 90	27 3	1915					0 8	1 2	2 3	11 7	7 7	23 1	11 5	10 8	9 2	9 0	9 5	5 7
		33,215	2 80	2 00	30 1	1916					0 5	1 0	5 2	14 1	16 3	11 5	8 6	11 6	5 1	4 9	10 0	2 3
		31,300	3 00	2 00	33 3	1917					0 1	1 3	7 7	11 9	11 8	10 5	11 9	9 7	6 0	5 9	12 9	10 3
		35,225	2 70	2 10	22 2	1918					1 9	0 7	0 1	10 7	13 9	14 2	10 8	12 1	5 1	11 8	10 6	4 3
		37,479	2 80			1919	24 0	0 7	69 3	6 0	2 0	0 2	5 5	17 2	8 5	13 3	11 7	10 4	6 9	5 0	9 9	9 3
		37,037	2 85	2 11	25 1	1920	24 1	0 1	67 6	7 9												
7-Y	Kern River Canal and Irrigation Co., Kern County	18,530	1 69	1 97	57 9	1919					x	x	x	x	x	x	x					
7-Y	Central Canal Co., Kern River (c)	29,000	2 52	1 88	25 4	1919						x	x	x	x	x	x					
7-Z	James Canal (b) (d) (e)	8,000	4 31			1905	x		x	x	1 0	2 0	11 0	6 0	9 0	11 0	12 0	9 0	10 0	8 0	8 0	7 0
		8,620				1910																
		8,620				1911																
		8,620				1912																
		8,620				1913																
		5,511	3 94			1914																
		8,620	1 60			1915																
		1,117	4 13			1916																
		5,511	3 15			1917																
		5,511	3 95			1918																
		10,340				1919	12 0		27 1	60 9												
		1,110	1 40	4 07	7 60	1920	18 9		47 1	33 7												
7-Z	Carmichael Slough Ditch, James Irrigation Dist. (b)					1918								2 9	50 2	46 9						
7-Z	Jap Canal (i)					1918									57 3	42 7						

REMARKS- (a) Water diverted from Kern River, in priority 15th, above "Second Point." Diversion supplemented by pumping, which increases the percentages of use in June, July, August and September and reduces it in other months. (b) From original notes for Bull. 9, State Dept. of Eng., by S. T. Harding, 1921. (c) From 14th U. S. Census, 1920. (d) Water diverted from Kern River, in priority 3rd, above "Second Point." (e) From 4th Bien. Rpt., State Dept. of Eng. (f) Estimated. (g) Figures excessive. (h) From State Dept. of Pub. Wks., Div. of W. Rts., and San Joaquin Valley Farms Co. (i) From State Dept. of Pub. Wks., Div. of W. Rts. (x) These crops irrigated, quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct
7-Z	Pioneer Canal (*a*) (*b*).....	*c*12,000	5 00	....	....	1906	*x*	....	*x*	*x*	9 0	5 0	5 0	13 0	13 0	19 0	9 0	7 0	5 0	8 0	4 0	3 0
		8,268	...	.....	...	1910	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		10,482	....	....	...	1911	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		5,232	...	...	.....	1912	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		8,181	...	.....	.....	1913	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		16,621	2 86	...	...	1914	....	....	....	.	15 0	9 6	21 3	18 2	5 4	12 5	8 0	6 1	0 8	0 1	....	3 5
		9,994	2 54	...	...	1915	....	....	....	.	18 7	11 9	8 2	11.9	12 2	28 0	5 7	...	...	...	...	.....
		11,732	3 26	.	....	1916	....	....	....	..	5 7	1 5	14 0	9 5	12 7	5 9	7 9	3 8	1 8	7 2	10 3	16 6
		9,158	2 28	...	.....	1917	....	....	....	...	7.1	7 4	14 2	31.7	11 6	14 0	16 7	0 3	.....	....	...	.....
		8,077	2 33	...	.....	1918	....	....	....	....	...	...	16 6	29 6	25 3	18 6	....	....	....	....	....	9.9
		12,620	2 32	1 65	29 5	1919	31 5	0 5	3 2	64 8	30 8	21 6	8 9	.....	22 1	16 6	....	....	....	..	....	.....
		8,103	3 30	2 02	38 7	1920	49 3	.....	7 5	43 0	...	...	...	.....	...	...	...	...	...	...	...	.....
7-Z	Buena Vista Canal (*b*) (*d*) (*e*)..... ...	*c*8,000	2 00	.....	.....	1906	*x*	.....	*x*	*x*	9 0	6 6	8 0	10 0	12 0	15 0	13 0	8 0	8 0	6 0	4 0	1.0
		*f*6,500	.....	.....	.....	1910	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*7,280	.....	.....	... ...	1911	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*7,320	.....	.....	.....	1912	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*7,920	.....	.....	.....	1913	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		7,460	3 55	1 99	44 2	1914	....	....	....	..	15 4	2 7	11.4	9.9	9 2	7 8	3.7	4 9	3 5	4 8	17 1	9.6
		6,760	2 28	1 90	16 9	1915	....	....	....	....	10 8	3 8	3 6	11.4	3 1	4 9	8 3	7 6	4 3	10 0	7.4	24 8
		7,420	2 32	1 85	20 5	1916	....	....	....	....	7.9	6 9	16.6	21.2	7 9	7 1	7.4	6 1	3 0	2 5	0 3	13 1
		6,780	2 54	1 77	30 4	1917	....	....	....	....	5 8	1 5	23 3	18 0	4 3	10 9	8 1	6 4	2 0	7.2	0.6	8 7
		6,920	3 00	1 81	40 0	1918	....	....	....	....	15.4	10 3	2 3	10 7	11 9	7 0	8 2	5 4	1 7	7.6	10 6	8.9
		8,220	1 76	1.39	29 8	1919	40 0	....	45 0	15.0	...	...	...	.....	...	...	...	...	...	...	...	.....
		7,806	2 52	.....	.....	1920	35 7	0 4	51.6	9 3	....	....	....	.....	....	....	....	....	....	....	....	.....
7-Z	Stine Canal (*b*) (*g*)..... .	*c*10,000	2 32	.....	.....	1906	*x*	.....	*x*	*x*	15 0	10 0	2 0	8.0	20 0	13 0	7 0	9 0	8 0	6 0	1 0	1 0
		*f*9,268	....	.....	.....	1910	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*9,630	....	.....	.....	1911	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*10,547	....	.....	.....	1912	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		*f*11,561	....	.....	.....	1913	....	....	....	....	...	...	...	...	...	...	...	...	...	...	...	.....
		9,620	4 50	2 80	37.7	1914	....	....	....	....	3.4	....	13 3	12 3	11 1	12 4	12 7	7.7	4 5	6 4	6 8	9 4
	Continued on next page.	9,210	3.30	1 90	43.8	1915	....	.....	.....	.....	11.8	6 6	1.4	15 6	3 5	22 4	16.7	4.0	8 0	1 8	....	8.2

REMARKS—(*a*) Water diverted from Kern River, in priority 9th, above "Second Point." (*b*) From 4th Bien. Rpt., State Dept. of Eng. and original notes for Bull. 9, State Dept. of Eng., by S. T. Harding, 1921. (*c*) Estimated. (*d*) Water diverted from Kern River, in priority 2d, above "Second Point." (*e*) From An. Rpts. of company to State R. R. Comm. (*f*) Figures excessive. (*g*) Water diverted from Kern River, in priority 5th, above "Second Point." (*x*) These crops irrigated; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct.		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
	Continued from page 156.																					
7-Z	Stine Canal (*a*) (*b*)	10,460	2 70	2 20	38 9	1916	....	....	....	.....	10 0	1 9	4 5	12 2	10 8	14 0	7 8	8 1	6 2	7 4	8 3	8 8
		10,670	3 10	1 80	41 1	1917	....	....	....	.....	6 0	1 7	11 4	14 9	11 5	15 4	17 7	8 5	5 6	4 4	1 3	1 6
		10,590	2 30	1 90	20 9	1918					10 0	18 9	3 2	8 0	13 5	16 5	6 9	1 0	1 0	12 3	4 7	3 4
		11,311	2 01	1 48	26 4	1919	17 8	0 3	42 2	9 7	....	....	....	....	....	....	....	....	....	....	....	.....
		9,052	3 10	2 50	18 8	1920	46 4	0 4	11 6	11 6	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
8-A	Ensher and Alexander Farm	215	....	1 51	..	..	25 6	....	55 8	18 6						1 4	15 9	5 7		21 2	31 8	21 0
		555	.	1 52			9 9		82 9	7 2	1 4	3 8	6 0	6 9	6 2	12 8	13 5	12 8	9 3	9 5	12 7	5 1
		555	.	1 76	.		9 9	10 8	72 1	7 2	8 9	9 5	11 0	9 7	12 7	10 4	10 2	12 7	9 1	1 3	1 8	0 1
8-C	Boston Land Co.	.....		0 50		1920	..	....	....	.....												.....
		....		1 12		1920	..	....	....	.....										....	....	.....
9-B	McNeil Irrigation Co., San Luis Obispo County (*c*)	51	1 14	1 11	.....	1919	..	.	.	....												.....
		51	1 01	1 01	.	1920	..	.	.	....												.....
		51	0 78	0 78	.....	1921	..	....	....	..												.....
9-C	Santa Maria Water Co. (*d*) (*e*)	8,000	3 06	*g*2 50	*f*17 0	1918	.	.	....	*a*100 0	..	.	....									
9-D	Gobernador Land and Water Co., Santa Barbara County (*e*) (*r*)	300		1 20	.	1918		100 0		..	.		/						..			
10-A	Spreckels Sugar Co., Ranch No. 1, Monterey County	1,372		1 58		*f*1900																
		..		3 00	..	*n*	100 0	.		.												
		..		1 50		*n*			100 0													
10-B	Salinas Valley (*e*)	1,716		1 32		1900				*a*100 0												
		356		1 25		1900				*a*100 0												
11-A	Alameda County Water Dist. (*o*	6,619		1 05	.	1917	17 2	6 4	6 2	44 0	1 1	1 7	1 7	2 4	8 2	15 4	19 7	17 8	11 2	8 7	5 9	4 5
						1918				..	1 5	2 1	2 5	2 7	8 0	18 2	17 8	16 6	13 7	8 0	5 1	4 9
					..	1919	.			.	1 3	1 2	1 5	1 5	7 0	19 3	18 8	14 7	14 2	8 3	6 7	5 1
11-B	Sixty pumps (*p*) (*q*)	2,272		1 43	....	*f*1904		100 0														

REMARKS. (*a*) Water diverted from Kern River, in priority 5th, above "Second Point." (*b*) From 4th Bien. Rpt., State Dept. of Eng., and original notes of Bull. 9, State Dept. of Eng., by S. T. Harding, 1921. (*c*) From rpt. on Arroyo Grande, San Luis Obispo County, by G. W. Rhodes, San Francisco. (*d*) Betteravia. (*e*) From U. S. D. A. data collected by C. E. Tait. (*f*) Estimated. (*g*) Average of variable. (*h*) Sugar beets. (*n*) Reported to irrigate once in a season. Time and quantity unknown. (*o*) Near Carpinteria. (*p*) Water used for 6 months, monthly amounts unknown. (*q*) From O. E. S. Bull. 100, U. S. D. A., 1899-1900, by C. D. Marx. (*a*) From W. S. Paper No. 89, U. S. G. S., by H. Hamlin. (*r*) From 9th Bien. Rpt., State Dept. of Eng. (*s*) From State Dept. of Pub. Wks., Div. of W. Rts., rpt. by Paul Bailey, Sacramento. (*p*) These canals irrigate an area along the foothills from Cupertino to Guadalupe River. (*q*) Irrigation in Santa Clara County. (*r*) From O. E. S. Bull. 158, U. S. D. A., 1905.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P ct	P.ct	P.ct	P ct	P.ct	P ct	P.ct	P.ct	P ct.
11-B	Pioneer Canal, Santa Clara County (*a*) (*b*)	900	3 34	*c*2 50	25 0	1904	.....	100 0	....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....
		200	4 39	*c*3 29	25 0	1912	....	100 0	.....	....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-B	Sorosis Canal, Santa Clara County (*a*) (*b*)	3,021	1 75	*c*1 31	25 0	1904	.....	100 0	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		150	2 67	*c*2 00	25 0	1912	....	100 0	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-B	Kirk Canal, Santa Clara County (*a*) (*b*)	415	2 29	1 60	30 1	1912	....	100 0	.....	....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-B	Paul Massum, Santa Clara County (*a*) (*b*)	45	7 67	3.10	59 6	1912	.....	100 0	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-B	Statler Canal, Santa Clara County (*d*) ...	1,961	1 58	..	....	1904	*x*	*x*	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-D	Pajaro Valley Pumping Plants (*b*)	776	....	3 75	.....	1909	.....	.....	.....	100 0	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12-A	Delta Lands of Sacramento and San Joaquin Rivers (*f*)	470,000	....	*g*1.14	.....	1920	3 50	6 20	54.2	36 1	....	.....	1 6	1 8	6 0	22 3	25 1	21.9	14.9	4 5	1 9	.....
13-B	El Camino Irrigation Dist., Tehama County (*h*)	620	1 32	1.22	8 0	1921	8 40	4 70	57 4	29 5	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-C	Los Molinos, Tehama County (*i*)	*j*112	....	6 30	.....	1913	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*k*103	...	4 96	.....	1914	100 0	.....	.....	.....	.....	.....	.....	18 6	19 2	24 1	18 7	18 3	1 1	.....	.....	.....
13-C	Los Molinos Land Co., (Concland Water Co.), Tehama County (*l*)	7,576	7 32	5 30	27 5	1916	65 0	.....	.....	35 0	....	.....	.....	11 4	19 6	18 9	17 0	17 8	15.3	.....	.....	.....
		7,638	7 22	5 23	27 5	1917	.....	.....	.....	.....	.....	.....	.....	10.5	15 6	18 1	17 9	15 8	13.1	9.0	.....	.....
		8,206	5 11	3.70	27 5	1918	.....	.....	.....	.....	.....	.....	.....	12 6	22 9	21 9	17 3	15 5	9 8	.....	.....	.....
		9,453	5 51	3 99	27 5	1919	.....	.....	.....	.....	.....	.....	.....	13.0	20 3	18 5	15 8	14 1	13 1	5 1	.....	.....
		10,003	4 45	3 22	27 5	1920	.....	.....	.....	.....	.....	.....	.....	10 6	21 8	20 5	16.7	13 5	12 4	4 7	.....	.....
		10,003	5 26	3 81	27.5	1921	.....	.....	.....	.....	.....	.....	.....	8.1	17 7	17.7	19 8	15.5	12 9	8 3	.....	.....
13-D	Stanford Vina Ranch, Tehama County (*m*)	3,478	4 48	.....	.....	1921	66.2	7 2	5.1	21.5	.....	.....	.....	.....	24 6	15 5	24 7	19.5	15.7	.....	.....	.....

TABLE 8.

REMARKS—(*a*) These canals irrigate an area along the foothills from Cupertino to Guadalupe River. (*b*) From 4th Bien. Rpt., State Dept. of Eng. (*c*) Net use about 25 per cent less than gross. (*d*) From 3d Bien. Rpt., State Dept. of Eng. (*f*) From C. E. Grunsky, San Francisco. (*g*) Estimated; based on power consumption and observation on selected areas. No allowance made for water drawn by plants from underground seepage into area. (*h*) From O. R. Smith, Eng. for El Camino Irrig. Dist. (*i*) From Bull. 3, State Dept. of Eng. (*j*) Weighted average for 9 farms. (*k*) Weighted average for 10 farms. (*l*) From records of company. (*m*) From F. D. Robson, Mgr. (*x*) These crops irrigated; areas unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct
13-F	Farms near Orland, Glenn County (*a*) . .	170	.....	*b*3.97	.....	1913	100 0	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
		233	....	*c*4.44	.....	1914	100 0	.....	.....	.....	....	....	6 5	5 5	23 7	18 5	18 5	15 1	9 4	2 8	.....	.....
13-F	Orland Project, U. S. R. S., Glenn County	128	5 06	4 50	10 0	*d*1906	98 0	2 0	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
		703	6 94	.	. .	*d*1908	*x*		.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
		2,441	7 00	3 40	51 0	*e*1910	89 0	11 0	.....	.....	....	....	....	*f*11 0	50 0	33 0	6 0	.....	.....	.....	.....	.....
		2,663	14 72	3.90	73 0	*e*1911	*fy*	*fy*	.....	.....	....	....	....	*f*6 0	18 0	17 0	15 0	15 0	13 0	12 0	3 0	1 0
		4,220	8 05	3 95	50 9	*g*1912	*fy*	*fy*	...	...	....	....	1 3	7 1	17 2	20 2	19 8	19 3	7 4	7 7	...	
		6,617	6 10	3 00	50 1	*g*1913	*fy*	*fy*	...	...	....	....	10 3	12 0	22 4	20 6	23 4	11 3	...	...	...	
		7,354	6 81	4 08	40 1	*g*1914	*h*79 0	10 0	2 0	9 0	....	....	0 7	5 4	17 8	18 2	19 6	19 2	14 7	4 4	...	
		8,928	5 74	3 40	40 7	*g*1915	*h*63 0	10 0	22 0	5 0	....	....	....	0 3	6 2	23 5	22 4	20 3	19 6	7 7	...	
		9,357	6 41	4 07	36 6	*g*1916	*h*64 0	10 0	19 0	7 0	....	....	....	13 0	19 4	19 6	17 7	17 3	12 5	0 5	...	
		12,729	5 79	3.49	39 8	*g*1917	*h*47 0	13 0	36 0	4 0	....	1 7	2 9	10 6	16 0	16 0	20 0	18 5	13 4	0 6	0 3	
		14,764	3.11	1 91	38 6	*g*1918	43 0	8 0	45 0	4 0	....	....	....	9 4	25 2	19 4	17 2	12 5	12 1	4 2		
		15,203	4 74	2 96	37 5	*g*1919	41 0	11 0	45 0	3 0	....	....	....	11 2	19 6	18 9	19 9	17 9	11 8	0 7		
		15,870	2 44	1 49	38 9	*g*1920	37 0	17 0	42 0	4 0	0 7	4 0	8 1	23 5	22 8	17 5	13 4	7 4	2 6			
		14,700	4 68	3 01	35 8	*g*1921	35 0	19 0	41 0	5 0	....	....	....	11 3	16 7	16 9	18 9	18 6	14 3	3 0	0 3	
13-H	Durham State Land Colony, Butte County (*i*)	3,000	2 70	.	.	1920	60 0	..	...	40 0	....	....	....	....	....	....	....	....	....	....	....	.....
13-K	Farms near Willows, Glenn County (*j*) .	*k*114	...	1 62	.	1914	100 0			.	....	....	....	....	....	....	....	....	....	....	....	.....
		*l*67	..	1 76	.	1915	100 0			.	....	....	....	....	19 2	21 8	16 2	27 8	15 0	.	.	.
13-M	Glenn-Colusa Irrigation Dist. (*m*)	*n*493	....	2 30	. . .	1920	63 6	. .	36 4	.	....	....	....	....	....	....	....	....	....	....	....	....
13-M	Central Canal, Glenn and Colusa Counties (*d*)	2,000	8 40	...	. . .	1907	...	.	....	...	....	....	....	....	....	....	19 3	32 7	34 4	13 6		
13-M	Sacramento Valley West Side Canal Co., Glenn and Colusa Counties (*o*) . . .	3,448	9 80	. .	. .	1910	. .	. .	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		5,800	6 00	...	. . .	1911	..	....	....	.	....	....	....	*x*	*x*	*x*	*x*	*x*	*x*			
		16,906	4 10	. . .	.....	1912	..	....	....	....	....	....	....	*x*	*x*	*x*	*x*	*x*	*x*	*x*		
		16,111	4 30	...	. . . .	1913	..	....	...	.	....	....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*		
		12,265	5 40	. . .	. . . .	1914	..	....	....	*p*100 0	....	....	....	....	*x*	*x*	*x*	*x*	*x*	*x*		
	Continued on next page.	11,940	4 50	3 00	33 2	1915	52 1	17 5	18 3	12 1	....	....	....	....	*q*4 8	22 7	27 6	24 0	18 6	1 7		..

REMARKS—(*a*) From Bull. 3, State Dept. of Eng. (*b*) Weighted average for 5 farms. (*c*) Weighted average for 8 farms. (*d*) From O. E. S. Bull. 207, U. S. D. A. (*e*) From Irrigation Practice and Engineering, by B. A. Etcheverry. (*f*) From 4th Bien. Rpt., State Dept. of Eng. (*g*) From Reclamation Record, U. S. R. S., Vols. 1 to 11. (*h*) Crop census compiled from detailed tabulations in Reclamation Record. (*i*) Estimate of Geo. C. Kreutzer, Supt. (*j*) From Bull. 3, State Dept. of Eng. (*k*) Weighted average for 6 farms. (*l*) Weighted average for 4 farms. (*m*) From district. (*n*) In T. 15 and 16 N., R. 3 W. (*o*) From office of E. C. Mills, Willows; prepared by J. P. Ryan. (*p*) Rice, 1.2 per cent of total crops. (*q*) Net monthly amounts of water. (*x*) Water used; quantity unknown. (*y*) These crops irrigated; quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
	Continued from page 159.	Acres.	Feet.	Feet.	P.ct.		P ct.	P ct.	P.ct.	P.ct.	P ct	P ct	P ct	P ct	P ct	P ct.	P ct.	P ct	P ct.	P ct.	P ct.	P ct
13-M	Sacramento Valley West Side Canal Co., Glenn and Colusa Counties	18,228	7 70	.....	.....	*a*1916	.....	.....	.....	*c*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		29,315	5 10	.....	.....	*a*1917	.....	.....	.....	*d*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		42,870	5 20	.....	.....	*a*1918	.....	.....	.....	*e*100 0	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		32,984	6 58	4 09	38.0	*b*1918	.....	.....	.....	*f*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		41,000	6 70	.....	.....	*a*1919	.....	.....	.....	*g*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		59,000	6.50	.....	.....	*a*1920	.....	.....	.....	*g*100 0	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
13-O	Farms near Gridley, Butte County (*i*)	284	.....	*j*3.17	.....	1913	100 0	.....	.....	.....	.....	.....	.....	.....	28 4	20 9	20 2	18 4	12 1	.....	.....	.....
13-P	Colusa Irrigation Co. (*k*)	300	3.08	.....	.....	1909	100.0	.....	.....	.....	.....	.....	.....	.....	22 0	23 0	20 0	18 0	17 0	.....	.....	.....
13-Q	South Feather Land and Water Co., Yuba County	1,250	.....	.....	.....	*k*1909	.....	.....	.....	.....	.....	.....	.....	16 0	16 0	13 0	13 0	13.0	13 0	11 0	5 0	.....
		1,200	5.83	3.64	35.0	*k*1911	.....	.....	.....	.....	.....	.....	.....	.....	11 0	21 0	21 0	16 0	17 0	14 0	.....	.....
		1,900	.....	5 63	.....	*l*1919	.....	.....	.....	.....	.....	.....	.....	5 0	14 0	15 0	19 0	19 0	17 0	11 0	.....	.....
		1,900	.....	5 63	.....	*l*1920	.....	.....	.....	.....	.....	.....	.....	5 0	14.0	15.0	19 0	19 0	17 0	11.0	.....	.....
13-Q	Alicia Mutual Water Co., near Marysville (*m*)	193	1.48	.....	.....	1918	14 0	42 0	7 0	*n*37 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		563	1 38	.....	.....	1919	16.0	20.0	21.0	43 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		76	2.00	.....	.....	1920	21.0	79.0	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-Q	Farm Land Investment Co., near Marysville (*m*)	*o*1,360	*o*0 96	.....	.....	1917	.....	.....	.....	*n*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*o*1,360	*o*0 96	.....	.....	1918	.....	.....	.....	*n*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*o*400	*o*1 00	.....	.....	1919	.....	.....	.....	*n*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-R	Sutter Mutual Water Co. (*p*)	6,460	1 50	1 08	27 9	1919	0 8	.....	6 2	93 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		10,005	1 57	1.30	16 9	1920	1.0	.....	31.7	67 3	.....	.....	.....	7 0	42 2	21 9	7 2	7.2	12 8	1 7	.....	.....
		8,594	3.26	1.91	41 4	1921	14.7	.....	.....	85 3	.....	.....	.....	1 0	30 7	30 3	7 1	10 8	2.5	13 2	4 4	.....
13-R	Sutter-Butte Canal Co., Butte County	14,000	7.53	4.90	34 9	*q*1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		25,000	.....	.....	.....	*l*1913	.....	.....	.....	.....	.....	.....	.....	5 8	14 7	23 5	23 5	17 8	11 7	3 0	.....	.....
		31,500	.....	.....	.....	*r*1914	.....	.....	.....	*s*100 0	.....	.....	.....	*l*2 9	12 9	14 3	22.9	22 9	17 1	7 0	.....	.....
		34,300	5.85	.....	.....	*r*1915	.....	.....	.....	*s*100 0	.....	.....	.....	*l*4 0	11 8	14 5	23 .	23 7	15 8	6 5	.....	.....
	Continued on next page.	321	.....	2 54	...	*r*1915	100 0															

REMARKS—(*a*) From office of E. C. Mills, Willows; prepared by J. P. Ryan. (*b*) From district. (*c*) Rice, 48 per cent. (*d*) Rice, 56 per cent. (*e*) Rice, 69 per cent. (*f*) Rice, 82 per cent. (*g*) Rice, 73 per cent. (*h*) Rice, 83 per cent. (*i*) From Bull. 3, State Dept. of Eng. (*j*) Weighted average of 14 farms. (*k*) From 4th Bien. Rpt., State Dept. of Eng. (*l*) From An. Rpts. of company to State R. R. Comm. (*m*) From Farm Land Inv. Co., San Francisco. (*n*) Beans. (*o*) Computed from estimated areas and water quantities. (*p*) From R. L. Jones, Sacramento. (*q*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. (*r*) From company. (*s*) Rice, 37 per cent. (*x*) Water used; quantities unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land. Gross	Annual use in depth on land. Net.	Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total. Alfalfa.	Trees Vines	Grain	Misc.	Monthly use in per cent of annual use. Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
	Continued from page 160.	Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P.ct.
13-R	Sutter-Butte Canal Co., Butte County (*a*)	764		2 38		1915	....	....	....	100 0	....	....	..	....	....	....	....	....	....	....	....	....
		38,000	6 96			1916	....	....	....	*b*100 0	....	....	..	*h*6 9	13 8	18 4	20 7	20 7	13 8	5 7	....	....
		36,000	6 40			1917	17 0	9 0	17 0	*c*57 0	....	....	..	*h*6 9	13 8	18 4	20 7	20 7	13 8	5 7	....	....
		41,000	6 48			1918	....	....	....	*d*100 0	*h*1 3	....	..	*h*5 1	17 9	17 9	16 6	17 9	15 1	8 2	....	
		44,000	6 85			1919	....	....	....	*e*100 0	....	....	..	*h*4 3	17 2	19 1	19 1	19 4	16 1	4 2	....	
		52,000				1920	....	....	....	*f*100 0	....	....	..	*h*8 3	15 3	20 3	18 4	16 3	12 8	8 6	....	
		50,750	6 31			1921	....	....	....	*g*100 0	....	....	....	....	....	....	....	....	....	....	....	....
	RICE PREDOMINATING CROP.																					
13-G	Parrott and Phelan Plant near Chico, Butte County (*i*)	3,166	10 00			1919	....	....	....	*g*100 0	....	....	....	....	*k*1 8	11 7	23 2	29 3	21 2	9 8		
		3,000	10 90	10 30	5 4	1920	....	....	....	*f*100 0	....	....	....	....	*l*11 4	18 3	24 7	23 8	20 6	1 2		
		11,50	9 10	8 50	6 6	1921	..	..	..	*g*100 0	....				*m*4 2	13 1	19 8	32 6	29 3	1 0		
13-I	Western Canal Co., (Great Western Power Co.), Butte County, below Oroville (*n*)	5,783	7 02			1916	..	..	..	*o*100 0					11 2	32 0	32 0	21 1	0 1			
		7,510	7 58			1917				*p*100 0				0 8	5 2	15 1	29 1	29 3	19 8	0 1		
		12,385	7 02			1918				*q*100 0					3 5	20 3	29 8	25 9	18 2	2 3		
		19,107	6 29	5 73	9 0	1919				*r*100 0				0 3	12 1	24 0	27 2	23 2	12 7	0 5		
		24,569	5 84	5 35	9 0	1920				*s*100 0				1 2	11 6	18 4	27 1	24 5	11 1	0 1		
13-J	Farms east of Sacramento River, Butte County.	*u*535	5 29	4 90	7 1	*t*1916				*v*100 0					*x*	*x*	*x*	*x*	*x*	*x*		
		*v*2,381	8 45	5 47	38 8	*t*1917				*v*100 0					*x*	*x*	*x*	*x*	*x*	*x*		
		*y*9,781	8 52			*w*1918				*v*100 0				1 2	30 7	16 7	18 8	11 5	10 5	1 6		
		*z*14,706	8 00			*w*1919				*v*100 0					12 2	18 9	25 1	24 1	16 5	6 0	0 2	
		*aa*8,152	8 74	6 27	28 2	*w*1919				*v*100 0					*bb*10 1	22 4	30 1	23 1	13 1	1 9		
		*cc*15,187	8 71			*w*1920				*v*100 0			10 3	1 0	14 8	18 1	24 6	19 7	17 8	5 5	0 7	
		*dd*7,594	9 56	5 65	40 7	*w*1920				*v*100 0												
		*ee*2,164	12 66	7 39	41 7	*w*1921				*v*100 0					3 8	31 2	20 1	17 9	16 5	10 7		
13-M	Sacramento Valley West Side Canal Co. (*ff*)	*gg*607		4 16		1918	..			*v*100 0					26 0	20 0	24 0	15 0	15 0			
		*hh*1,244		4 79		1918				*v*100 0				2 0	24 0	15 0	22 0	27 0	10 0			
	Continued on next page	*ii*5,167		5 72		1918				*v*100 0				1 0	14 0	17 0	23 0	23 0	18 0	1 0		

REMARKS: (*a*) From company. (*b*) Rice, 41 per cent. (*c*) Rice, 36 per cent. (*d*) Rice, 51 per cent. (*e*) Rice, 39 per cent. (*f*) Rice, 52 per cent. (*g*) Rice, 57 per cent. (*h*) From An. Rpts. of company to State R. R. Comm. (*i*) From Poll. and Robinson, Chico. (*j*) Rice. (*k*) From rpt. to State Eng. by J. B. Brown. Season from May 18 to Oct. 30. (*l*) Season from May 5 to Oct. 6. (*m*) Season from May 5 to Oct. 8. (*n*) From Mr. Cauthard, Mgr., Oroville. (*o*) Rice, 99 per cent. (*p*) Rice, 100 per cent. (*q*) Rice, 84 per cent. (*r*) Rice, 98 per cent. (*s*) Rice, 100 per cent. (*t*) from Bull. 325, Univ. of Calif., Agr. Exp. Sta. (*u*) Weighted average for 5 farms. (*v*) Weighted average for 7 farms. (*w*) From State Dept. of Pub. Wks., Div. of W. Rts., rpt. by H. M. Stafford, Sacramento. (*x*) Water used; quantity unknown. (*y*) Weighted average for 2 tracts between Butte City and Marysville. (*z*) Weighted average for 5 tracts between Marysville and Sacramento. (*aa*) Weighted average for 5 tracts between Butte City and Sacramento. (*bb*) Weighted average for 2 tracts in the Sutter Basin, a portion of the four tracts in (*cc*). (*cc*) Tract in Sutter Basin. (*dd*) Weighted average for 2 of 5 farms under (*z*). (*ee*) Weighted average for 4 tracts between Butte City and Sacramento. (*ff*) From Glenn-Colusa Irrigation Dist. (*gg*) In Sec. 4, T. 18 N., R. 3 W. and Sec. 32, T. 19 N., R. 3 W. (*hh*) Stone Corral lateral. (*ii*) Laurine, Q. E. and Spaulding laterals.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees. Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
	Continued from page 161.	Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P ct.	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P ct	P.ct.	P.ct.	P.ct.
13-M	Sacramento Valley West Side Canal Co., Glenn and Colusa Counties	32,984	6 58	4.09	38 0	*a*1918	.....	.....	.....	*c*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		18,228	7 70	.....	.....	*b*1916	.....	.....	.....	*d*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		29,315	5.10	.....	.....	*b*1917	.....	.....	.....	*e*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		42,876	5 20	.....	.....	*b*1918	.....	.....	.....	*f*100 0	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		41,000	6.70	.....	.....	*b*1919	.....	.....	.....	*g*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
		59,000	6.50	.....	.....	*b*1920	.....	.....	.....	*h*100.0	.....	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....
13-M	Glenn-Colusa Irrigation Dist. (*i*)	*j*180	.....	7 84	....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	7 0	15 0	21 0	25 0	23 0	9 0	.....	.....	.....
		*k*4,277	.....	*l*4.64	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	.....	13 0	18 0	28 0	22 0	16 0	3 0	.....	.....
		*m*4,051	.....	6 00	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	4 0	14 0	19 0	20 0	22 0	17 0	4 0	.....	.....
		*n*564	.....	4.84	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	.....	4 0	23 0	24 0	27 0	19 0	3.0	.....	.....
		*o*188	.....	12 01	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	.....	16 0	18 0	24 0	22 0	18 0	2 0	.....	.....
		*p*57,000	6 24	*s*5 49	19 0	1920	.....	.....	.....	*r*100 0	.....	.....	.....	3 0	14 0	19 0	24 0	20 0	15 0	5 0	.....	.....
		*q*6,602	....	6.35	.....	1921	.....	.....	.....	*r*100 0	.....	.....	.....	2 0	14 0	25 0	25 0	20 0	13 0	1.0	.....	.....
13-N	Tracts west of Sacramento River (*u*)	*v*7,988	6 72	.....	.....	1917	.....	.....	.....	*r*100 0	.....	.....	.....	3.1	11 0	20 5	21 4	22.2	21 4	0 4	.....	.....
		*w*27,749	7.52	.....	.....	1918	.....	.....	.....	*r*100 0	.....	.....	.....	.....	8 2	21.5	20 4	24 6	19 2	5.9	0.2	.....
		*y*40,339	7 39	.....	.....	1919	.....	.....	.....	*r*100 0	.....	.....	.....	.....	11 7	23.3	22 8	23.3	17 2	1.7	.....	.....
		*z*54,296	7 12	....	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	1 6	12 6	21 0	22 8	20 4	16.8	4 7	0.1	.....
		*aa*27,687	8 26	....	.....	1921	.....	.....	.....	*r*100 0	.....	.....	.....	1 6	9 8	20 7	23 1	22.5	15 9	6.4	.....	.....
13-N	Farms in Tehama, Glenn, Colusa and Yolo Counties (*bb*)	*cc*2,767	7 70	6 31	18 0	1916	.....	.....	.....	*r*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		*cc*8,890	6 55	5 17	21 0	1917	.....	.....	.....	*r*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		*dd*7,898	5.37	4 24	21 0	1918	.....	.....	.....	*r*100 0	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
13-N	Tracts in the Sacramento Valley (*ee*)	199,893	7.69	.....	.....	.....	.....	.....	.....	*r*100 0	.....	.....	.....	0 9	13.1	21 4	22 6	20.9	16 5	4.5	0 1	....
13-Q	Alicia Mutual Water Co., near Marysville (*ff*)	2,350	6.18	....	.....	1917	.....	.....	.....	*r*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3,232	6.19	.....	.....	1918	.....	.....	.....	*r*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3,101	6 00	.....	.....	1919	.....	.....	.....	*r*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1,600	6 25	.....	.....	1920	.....	.....	.....	*r*100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) From Glenn-Colusa Irrigation Dist. (*b*) From office of E. J. Mills, Willows; prepared by J. P. Ryan, Willows. (*c*) Rice, 82 per cent. (*d*) Rice, 48 per cent. (*e*) Rice, 56 per cent. (*f*) Rice, 69 per cent. (*g*) Rice, 73 per cent. (*h*) Rice, 83 per cent. (*i*) From company. (*j*) In Sec. 31, T. 17 N., R. 3 W. (*k*) In T. 15 and 16 N., R. 3 W. (*l*) About 11 per cent of acreage in alfalfa and rice converted into rice acreage by use of 0.5 as a conversion factor. (*m*) In T. 18 N., R. 3 W. (*n*) In T. 19 N., R. 3 W. (*o*) In T. 20 N., R. 3 W. (*p*) Total for whole district. (*q*) In T. 15 and 16 N., R. 3 W. (*r*) Rice. (*s*) At lateral headgates. (*u*) From Dept. of Pub. Wks., Div. of W. Rts., rpt. by H. M. Stafford, Sacramento, on duty of water for rice. (*v*) Weighted average for 2 tracts near Knights Landing. (*w*) Weighted average for 4 tracts between Willows and Knights Landing. (*x*) Water used; quantities unknown. (*y*) Weighted average for 6 tracts between Willows and Arbuckle. (*z*) Weighted average for 8 tracts between Willows and Arbuckle. (*aa*) Weighted average for 7 tracts between Willows and Knights Landing. (*bb*) From Bull. 325, Univ. of Calif., Agr. Exp. Sta. (*cc*) Weighted average for 13 farms. (*dd*) Weighted average for 5 farms. (*ee*) Average of all data collected by H. M. Stafford in rpt. to State Dept. of Pub. Wks., Div. of W. Rts. (*ff*) From Farm Land Inv. Co., San Francisco.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land. Gross	Annual use in depth on land. Net.	Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total. Alfalfa	Trees Vines	Grain	Misc.	Monthly use in per cent of annual use. Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P ct.	P ct.	P.ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P.ct	P ct	P ct	P ct	P ct
13-Q	Farm Land Investment Co., near Marysville (*a*)	*b*1,350	*b*6 44	..	.	1917	....	....	....	*c*100 0	....	....	....	....	....	....	....	....	....	....	....	....
		*b*1,350	*b*6 44			1918	....	....	....	*c*100 0	....	....	....	....	....	....	....	....	....	....	....	....
		*b*2,000	*b*8 00			1919	....	....	....	*c*100 0	....	....	....	....	....	....	....	....	....	....	....	....
13-Q	Cordua Irrigation Dist. (*d*)	2,286	....	5 90		1919	....	....	....	*c*100 0	....	....	....	....	....	....	....	....	....	....	....	....
13-Q	South Feather Land and Water Co., Yuba County	1,250				*c*1909	....	....	....		..	....		16 0	16 0	13 0	13 0	13 0	13 0	11 0	5 0	....
		1,200	5 83	3 64	35 0	*c*1911	....	....	....			..			11 0	21 0	21 0	16 0	17 0	14 0	..	..
		1,900	.	5 63		*f*1919	....	....	....			..		5 0	11 0	15 0	19 0	19 0	17 0	11 0	..	..
		1,900	..	5 63		*f*1920	....	....	....			..		5 0	11 0	15 0	19 0	19 0	17 0	11 0	..	..
13-R	Sutter Mutual Water Co. (*g*)	7 798	8 25	6 07	27 9	1919	..	....	....	*c*100 0	.	....	.								....	....
		7 591	6 80	5 65	16 9	1920				*c*100 0				6 3	17 5	17 2	22 5	23 5	12 8	0 2	....	....
		2,164	12 61	7 39	41 4	1921				*c*100 0				1 0	16 3	24 6	22 4	21 2	12 5	..		..
13-R	Sutter-Butte Canal Co., Butte County	14,000	7 53	1 90	34 9	*h*1912	..	..	..		....	....	....									
		25,000				*f*1913	..	.						5 8	11 7	23 5	23 5	17 8	11 7	3 0		
		31,500				*a*1914	..	.		*i*100 0		..		22 9	12 9	11 3	22 9	22 9	17 1	7 1	7 0	
		34,300	5 85			*a*1915	..			*i*100 0				11 0	11 8	11 5	23 7	23 7	15 8	6 5		
		38,000	6 96			*a*1916				*i*100 0				16 9	13 8	18 4	20 7	20 7	13 8	5 7		
		36,000	6 46			*a*1917	17 0	9 0	17 0	*i*57 0				16 9	13 8	16 4	20 7	20 7	13 8	5 7		
		41,000	6 48			*a*1918	.		..	*i*100 0	1 3			5 1	17 9	17 9	16 6	17 9	15 1	8 2	..	.
		13,000	6 85		.	*a*1919	..		.	*m*100 0				14 3	17 2	19 1	19 1	19 1	16 1	4 2		
		52,000				*a*1920				*a*100 0				18 3	15 3	20 3	18 4	16 3	12 8	8 6	..	
		50,750	6 31			*a*1921				*a*100 0											..	
13-S	Farms between Marysville and Wheatland (*p*)	2,458	7 05			1921	.		23 0	*c*77 0					20 0	20 0	20 0	20 0	20 0	..	..	
13-T	Reclamation District No. 108 (*q*)	1,106	6 71	5 41	19 0	1916	...	.	.	*c*100 0				*rr*	*s*	*s*	*s*	*s*		..	..	
		3,547	7 96	5 89	26 0	1917	..	..	..	*c*100 0				*ss*	*s*	*s*	*s*	*s*		..	..	
		4,472	12 77	...	.	1918	...	..		.										..	....	
		5,605	8 55	..	..	1919	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	....	..
	Continued on next page.	14,210	7 14	...	.....	1920	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	

REMARKS. (*a*) From company. (*b*) Computed from estimated areas and water used. (*c*) Rice. (*d*) State Dept. of Pub. Wks., Div. of Eng. and Irrig., rpt. by J. B. Brown, Sacramento. (*e*) From 4th Biem. Rpt., State Dept. of Eng. (*f*) From An. Rpt. of company to State R. R. Comm. (*g*) From R. L. Jones, Sacramento. (*h*) State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (*i*) Rice, 37 per cent. (*j*) Rice, 44 per cent. (*k*) Rice, 36 per cent. (*l*) Rice, 51 per cent. (*m*) Rice, 19 per cent. (*n*) Rice, 52 per cent. (*o*) Rice, 57 per cent. (*p*) From W. Lewis and H. Walters, managers of the Fleming, Harding and Hammon Ranch. (*q*) From rpt. to district by F. H. Tibbetts, San Francisco. (*r*) Season 164 days. (*s*) Season 168 days. (*t*) Probably does not include water pumped from drainage. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P. ct.		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct.	P. ct.	P. ct.
	Continued from page 163.																					
13-T	Reclamation Dist. No. 108 (*a*) (*b*)	9,090	6 37	3 87	39 0	1921	.....	.....	.....	r100.0	....	....	....	....	45 9	....	20.4	21.2	12 2	0.3	.....	.....
13-U	Sacramento Valley (*c*) (*d*)	1,762	.....	3 28	.....	1913	100.0	....	....	.....	...	...	5 2	1 8	20.2	18 8	23.4	15.3	13 0	1 7	.....	.....
13-W	Natomas Company of California (*e*)	1,852	1 78	0 89	50 0	1918	1 0	.....	.....	99 0	.....	.....	.....	.....	1 1	42 6	31 9	22 1	2 3	.....	.....	.....
		4,155	2 42	1 12	53 8	1919	5 8	0 8	1 5	91 9	.....	.....	.....	.....	13 1	23 2	42 4	16.1	5 2	.....	.....	.....
		4,425	2 37	1 15	51 6	1920	12 2	1 0	1 5	85 3	.....	.....	.....	.....	7 3	41 0	35 0	10 7	5 8	0 2	.....	.....
		3,243	1.98	1 00	50 0	1921	24 8	5.6	.....	69.6	.....	.....	.....	.....	19 4	38 5	20 7	14 6	6 8	.....	.....	.....
13-X	Farms near Woodland, Yolo County	*g*295	.....	2 76	.....	*c*1913	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		*h*178	.....	1 82	.....	*c*1914	100 0	.....	.....	.....	.....	.....	14 8	.....	16 5	17 1	31.0	7.1	11.7	1.8	.....	.....
		*i*2,419	.....	1.11	.....	*f*1913	...	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-X	Moore Ditch, Yolo County (*j*)	6,598	3.15	.....	.....	1906	*k*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-X	Yolo Water and Power Co., Yolo County (*l*)	18,843	.....	1 81	.....	1913	51 0	9.0	40 0	.....	.....	.....	25 0	20 0	21.0	14.0	9.0	4 0	3 0	1.0	.....	.....
		9,089	.....	1 54	.....	1914	93 0	3 0	4 0	.....	.....	.....	.....	.....	6 0	32 0	25 0	20 0	8 0	8 0	1 0	.....
		11,358	.....	1 71	.....	1915	87.0	6 0	.....	*o*7 0	.....	.....	0 2	0.3	1.5	17 0	29 0	23 0	16 0	9.0	4.0	.....
		15,912	.....	4 26	.....	1916	....	.....	.....	*p*100 0	.....	.....	.....	.....	11 0	18 0	26 0	20 0	16 0	7.0	2 0	.....
		23,524	.....	4 46	.....	1917	....	.....	.....	*q*100 0	.....	.....	.....	0 5	15 0	21 0	24 0	21 0	14 0	4 0	0.5	.....
		23,300	.....	3.18	.....	1918	....	.....	.....	*r*100 0	.....	*t*	1 0	1 0	16 0	18 0	24 0	22.0	15 0	3.0	*t*	*t*
		20,906	.....	3 52	.....	1919	....	.....	.....	*s*100.0	.....	*t*	...	1 0	15 0	21 0	21 0	20 0	17 0	4 0	1 0	...
		12,536	.....	*m*0 65	.....	1920	75 0	21 0	...	4 0	.....	*m*	22 0	45 0	13 0	5 0	1 0	1 0	1 0	2 0	2 0	...
		19,078	.....	3 08	.....	1921	46 0	5.0	5 0	*s*44 0	.....	.....	.....	4 0	20 0	20 0	22.0	19.0	12.0	3.0	*g*	.....
		300	.....	6 38	.....	1915	....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		7,517	.....	6 31	.....	1916	....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		12,662	.....	5 35	.....	1917	....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		10,000	.....	4 64	.....	1918	....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		6,141	.....	7 75	.....	1919	....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		.....	.....	.....	.....	1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	(End of Rice Data.)	5,500	.....	5 91	.....	1921	.....	.....	.....	r100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) From rpt. to district by F. H. Tibbetts, San Francisco. (*b*) From rpt. to State Dept. of Pub. Wks., Div. of W. Rts., on duty of water for rice, by H. M. Stafford. (*c*) From Bull. 3, State Dept. of Eng. (*d*) Weighted average for 62 farms at Gridley, Los Molinos, Orland, Willows, Woodland and Dixon for years of 1913 and 1914. (*e*) Sacramento County between Sacramento River and American River. Includes Central, Elkhorn, and Riverside Mutual Water Companies. Information from the companies. (*f*) From Bull. 1, State Dept. of Eng. (*g*) Weighted average for 12 farms. (*h*) Weighted average for 14 farms. (*i*) Weighted average for 48 farms. (*j*) From O. E. S. Bull. 207, U. S. D. A. (*k*) Principal crop. (*l*) From company. (*m*) Year of water shortage. Due to litigation no water could be drawn from Clear Lake. (*o*) Rice, 3 per cent. (*p*) Rice, 47 per cent. (*q*) Rice, 53 per cent. (*r*) Rice, 63 per cent. (*s*) Rice, 29 per cent. (*t*) Less than one-half of one per cent used this month. (*v*) Rice.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use. in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines.	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
13-Y	Dixon, Solano County	*a*206	. .	2 08		*b*1913	100 0		. . .		. . .	. . .	4 1	10 4	14 3	16 0	20 0	13 6	11 9	6 7	. . .	
		68	. .	2 38	. .	*c*1907	. .	. . .		.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.
14-A	Jas. Mills Orchard Corp., Colusa County (*d*)	729	. . . .	2 11		1921	. .	100 0	. .	. .	. . .	. . .	. . .	. .	19 1	19 2	11 7	16 6	17 2	13 2	. . .	. . . .
14-C	Happy Valley Irrigation Dist., Shasta County (*e*)	1,700	. .	*f*0 60	. . .	1916		100 0	. . . .	. .	. . .	. . .	. . .	. .	. . .	. .	. . .	. . .	. . .	. . .	. . .	. .
14-D	Paradise Irrigation Dist., Butte County	. .	. .	*g*1 25	. . . .	*q*1912	.	100 0	. . .	. . . .	. . .	. . .	. . .	. . .	. . .	. .	. . .	. . .	. . .	. . .	. . . .	. .
		1,600	. .	*h*0 5	.	*q*1916	.	.	. . .	.	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
		2,400	1 40	0 98	*k*30 0	*m*1919	.	. .	. . .	. .	. .	. .	. .	. .	*j* . .	. .	. .	. .	. .	. .	. .	. .
		2,400	2 53	1 50	*k*18 6	*m*1920	.	. .	. . .	. .	*n*	. .	16 1	. .	12 5	14 8	14 8	14 8	10 7	8 3	4 0	4 0
		2,400	2 91	1 74	*k*40 8	*m*1921	.	. .	. . .	. .	*n*	. .	15 2	. .	. .	12 1	26 7	20 9	14 6	4 7	3 1	3 1
14-E	Pacific Gas and Electric Co., eight miles north of Oroville, Butte County (*e*)	200		2 36	.	1918	.	*p*100 0	. .	.	. . .	. . .	. . .	. .	*q*3 4	32 0	28 7	24 9	11 0	. . .	. .	. . .
		200		4 23	. .	1919	. .	*p*100 0	. .	.	. . .	. . .	. . .	. .	*r*20 6	23 0	20 6	18 5	17 3	. .	. .	. .
		200		2 96		1920	.	*p*100 0	. .	. .	. . .	. . .	. . .	. .	8 9 8	19 9	22 6	21 3	22 3	4 1	.	
14-E	Oro Water, Light and Power Co., Butte County (*t*)	810		*u*3 60	. . . .	1912		*x*		*u*	. . .	. . .	. . .	. .	. . .	. .	. . .	. . .	. . .	. . . .	. .	. . .
14-E	Pacific Gas and Electric Co., near Oroville (*o*)	1,000		2 53	. . .	1918	.	*v*100 0	. .	. .	. . .	. . .	. . .	. .	*w*19 4	19 4	20 9	20 9	14 6	4 8	. .	. .
		1,000		2 07		1919	.	*v*100 0	. .	. .	. . .	. . .	. . .	. .	*r*20 1	20 6	20 1	18 2	14 8	6 2	. .	. .
		1,000		1 95		1920	.	*v*100 0	. .	. .	. . .	. . .	. . .	. .	*r*23 1	21 6	20 5	17 9	16 9	. . .	. .	. .
14-E	Oroville Water Co., Butte County (*t*)	880	. .		. .	.	*x*	*x*	. .	. .	*cy*5 0	6 0	6 0	6 0	12 0	8 0	12 0	12 0	12 0	6 0	6 0	6 0
14-G	Palermo Land and Water Co., Butte County (*z*)	. .	. . .	. .	. .	1908	.	. . .	. . .	. . . .	. . .	. . .	. . .	13 0	6 0	17 0	18 0	19 0	15 0	11 0	1 0	. . . .
		1,981	. .	1 75	. .	1909	.	. . .	. . .	. . . .	. . .	. . .	. . .	7 0	21 0	17 0	21 0	17 0	15 0	2 0	. . .	. . . .

Continued on next page.

REMARKS—(*a*) Weighted average for 7 farms. (*b*) From Bull. 3, State Dept. of Eng. (*c*) From 11th Bien. Rpt., State Dept. of Eng. (*d*) Estimated by J. P. Ryan, Willows, from estimated efficiency of pumping plant, monthly power bills, and estimate of water used on alfalfa and other crops. (*e*) From company. (*f*) Measurements reported to be of low accuracy. (*g*) From rpt. to company by I. E. Goodner and S. E. Kiefer, San Francisco. (*h*) Average for 53 users for the years 1912-1916, from 0.4 to 0.5 ac. ft. per acre. (*i*) From rpt. to Div. of W. Rts. on Appl. 92 and 93, May 8, 1916, by G. W. Davis. (*j*) Season 150 days. (*k*) Estimated losses. (*l*) Includes reservoir losses. (*m*) From Mr. Edwards, Ch. Engr. (*n*) Distribution at head of ditch. Season given as extending from May 1 to 15 to between Sept. 1 and Oct. 1. (*o*) From Mr. Johnson, company's mgr., Marysville Dist. (*p*) Olives. (*q*) Season from May 25 to Sept. 12. (*r*) Season from May 1 to Sept. 30. (*s*) Season from May 4 to Oct. 5. (*t*) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. (*u*) Domestic supply of Thermalito included. (*v*) Citrus. (*w*) Season from May 1 to Oct. 31. (*x*) These crops irrigated; area unknown. (*y*) This monthly use sums up to only 98 per cent. (*z*) From data on Case 627, State R. R. Comm.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees. Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 165.	Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct.	P.ct.
14-G	Palermo Land and Water Co., Butte County (*a*)	1,984	.....	1 82	.....	1910	.....	.....	.....	.....	.....	.....	.....	4.0	24.0	18 0	19 0	15.0	14 0	5 0	1.0	.....
		1,984	.....	1 75	.....	1911	.....	.....	.....	.....	.....	.....	.....	1.0	16.0	17 0	20 0	19.0	17 0	9 0	1.0	.....
		1,984	*bc*6 06	1 43	*c*76 0	1912	.....	*y*	.....	*y*	.....	.....	.....	1.0	7 0	23 0	27 0	24 0	4.0	14 0	.....	.....
		1,981	.....	1 31	.....	1913	.....	.....	.....	.....	.....	.....	.....	1 0	14 0	19 0	20 0	18.0	14 0	14 0	.....	.....
		2,357	.....	1.39	.....	1914	.....	85 0	.....	15.0	.....	.....	.....	1.0	19 0	14 0	19 0	19 5	14.5	13.0	.....	.....
14-I	Newtown Ditch, Nevada County (*b*)	85	.....	3.52	.....	1910	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-I	Excelsior Water and Mining Co., Yuba and Nevada Counties	*d*5,000	3.30	2 50	23 5	1917	10 0	10 0	.....	80 0	.....	.....	.....	*f*	.....	.....	.....	.....	.....	.....	.....	.....
		*e*3,000	.....	2 90	.....	1919	.....	.....	.....	.....	.....	.....	.....	0.2	19.6	21 6	20.5	19 7	16.4	1.8	0.1	0.1
		*e*3,000	.....	2.80	.....	1920	.....	.....	.....	.....	.....	.....	.....	.....	11 7	20 6	22.6	23.4	17.5	4.2	.....	.....
14-J	Browns Valley Canal, Yuba County (*b*)	1,750	....	1 74	.....	1909	33 0	10 0	.....	57.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-K	Los Veriels Land and Water Co., Yuba County (*g*)	400	3.75	2.00	47 0	*h*1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-K	Feather River Valley, Butte County (*i*)	*j*223	....	1.96	.....	1912	8.0	46 0	.....	*k*46.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-O	Pacific Gas and Electric Co., Placer County (*l*)	1,263	.....	*m*1.07	.....	1916	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		14,482	.....	*m*1.07	.....	1917	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		14,278	.....	*m*1 17	.....	1918	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		15,919	.....	*m*1 15	.....	1919	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		18,239	.....	*m*1 26	.....	1920	.....	100 0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
		16,983	.....	*m*1.29	*n*13.2	1921	.....	100.0	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
14-O	Gold Hill Water Co., Placer County (*o*)	2,000	4.02	.....	.....	1909	.....	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-O	Bear River Water Co., Placer County	5,000	*o*5.82	*l*2 32	60.0	1909	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-O	South Yuba Ditch Co., Placer County (*p*)	16,750	1.67	*q*1 19	29.0	1913	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....	.....
14-O	South Yuba Water Co., Placer County	6,900	*o*7 74	*l*2 62	66 0	1909	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) From data on Case 627, State R. R. Comm. (*b*) From 4th Bien. Rpt., State Dept. of Eng. (*c*) Indicates large canal loss. (*d*) From 6th Bien. Rpt., State Dept. of Eng. (*e*) From An. Rpt. of company to State R. R. Comm. (*f*) Season 165 days. Rpt. on duty of water on lands irrigated by Excelsior M. and W. Co., by J. B. Brown, for U. S. Irrigation Investigation. (*g*) From State Dept. of Pub. Wks., Div. of W. Rts.; rpt. by D. M. Baker on Appl. 1795, June 23, 1921. (*h*) Average of 6 years, 1916 to 1921, inclusive. (*i*) From O. E. S. Bull. 254, by Frank Adams (*j*) Weighted averages for 9 farms. (*k*) Rice, 22 per cent. (*l*) From company. (*m*) Computed from area and record of delivery in miner's inches on a basis of a 150-day season. (*n*) Computed from inches diverted and inches sold for month of August. (*o*) From 13th U. S. Census, 1910. (*p*) From Terra Bella rpt. by S. E. Keiffer, San Francisco, 1915. (*q*) Second of 2 dry years. (*x*) Water used; quantity unknown. (*y*) These crops irrigated; area unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use. in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct.	P.ct	P ct	P.ct	P ct.	P ct	P.ct.	P.ct.	P.ct.	P.ct.
14-Q	El Dorado Water Co , El Dorado County (*a*)	4,000	....	1 03	....	1919	....	....	....	.....	0 1	0 3	0 4	0 4	4 4	17 4	26 4	28 6	17 4	2 8	1 5	0 3
		4,000	...	1.05	.....	1920	....	....	..	....	..	0 5	0 3	0 4	2 7	19 8	30 1	30 2	13 3	2 7	...	.....
14-R	American Canyon Water Co., Placer County (*b*)	4,000	....	0 75	. .	1911	....	100 0	....	.....	....	...	....	.....	...	...	....	...	...	....	.....	.....
14-T	Fair Oaks Irrigation Dist., Sacramento County	3,716	....	*c*0 90	..	1914	...	100 0	....	... .	..	...	....	*x*	*x*	*x*	*x*	*x*	..	....	.....	...
		..	....	*d*1 53		1919	....	...	....	...	...	...	....	.....	...	...	...	...	...	...	.....	...
14-T	Natomas Water Co., Sacramento and El Dorado Counties (*a*)	15,000	.....	2.00		1913	..	...	.....	....												
		1,300	....	...		1920	....	...	....	.. .	0 5	0 5	5.7	10 8	15 9	15 5	15 5	15 4	10 6	5 5	3 6	0.5
14-V	Michigan Bar	. ...	.....	.		*e*	.....	...	....	...	..	...	....	...	10 0	20 0	30 0	25 0	10 0	5 0	...	....
15-B	Rancho Lenoso, Napa County (*f*) (*g*)	1,500	2 00	*h*1 50	*h*25 0	1921	47 0	20 0	....	33.0	..	....	..	...	*x*	*x*	*x*	*x*	*x*	....	...	.....
15-C	Napa Valley, Napa County (*i*)	36	*h*2 89	2 17	*h*25 0	1911	100 0	....	....	. .	..	...	....	...	...	...	...	...	...	...	..	..
		5	*h*2 00	1 50	*h*25 0	1911	100 0	.....	....	...	..	...	....	...	...	...	...	...	...	...	...	....
16-A	Klamath Project, U. S. R. S. (*j*)	21,000	2 00	1 30	35 0	*k*1909	.	...	...	...	..	...	....	...	.	...	...	...	...	...	...	...
		27,108	1 55	0 90	42 0	*l*1910	24 0	.....	43 2	32 8	..	...	....	...	...	...	...	...	...	...	...	..
		23,869	1 93	1.20	38 0	*l*1911	...	...	...	...	..	...	....	...	...	...	...	...	...	...	...	.....
		23,834	1 77	1 13	36 1	*m* 1912	....	...	....	.....	..	...	....	...	15 1	25 7	37 2	18 5	3 5	...	...	
		18,928	2 01	1 17	41 8	*m* 1913	...	...	....	....	..	...	....	...	22 2	36 8	19 7	18 0	3 3			
		24,440	2 10	1 26	42 5	*m* 1914	....	....	....	....	..	...	....	...	24 6	23 0	30 9	16 7	4 8	..		
		27,254	2 57	1 12	56 4	*m* 1915	..	..	....	...	..	...	..	1 0	13 4	41 8	26 8	14 3	2 7	.	..	...
		29,351	2 25	1 02	54 7	*m* 1916	..	..	....	...	..	...	..	1 0	20 6	37 5	13 7	23 4	4 0			
	Continued on next page	33,645	1 95	0 98	49 8	*m* 1917	29 5	....	44 8	25 7	..	...	..	.	...	38 8	31 6	26 5	3 1			

REMARKS—(*a*) From An. Rpts. of company to State R. R. Comm. (*b*) From company. (*c*) From Terra Bella rpt., by S. E. Keiffer, San Francisco, 1915. (*d*) From rpt. by S. E. Keiffer on North Fork Ditch Co., 1920. (*e*) From Director, U. S. G. S. (*f*) Diversion from Horse Thief Creek and Front Creek to irrigate in Berryessa Valley, Napa County. (*g*) From State Dept. of Pub. Wks., Div. of W. Rts.; Appl. by J. C. Knowles. (*h*) Estimated. (*i*) From 3d Bien. Rpt., State Dept. of Eng. (*j*) Includes entire project in Oregon and California. (*k*) From rpts. of U. S. Engineers. (*l*) From Irrigation Practice and Engineering, by B. A. Etcheverry. (*m*) From Reclamation Record of U. S. R. S., Vols. I to 11. (*x*) Water used; quantity unknown.

TABLE 8—(Continued). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross.	Net.			Alfalfa.	Trees. Vines.	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 167.	Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P ct	P.ct	P.ct.	P.ct	P.ct	P.ct.	P.ct.	P.ct	P.ct.	P.ct.
16-A	Klamath Project, U. S. R. S. (*a*) (*b*)	33,268	3.18	1 36	57 2	1918	34 4	.....	36 6	29 0	....	....	....	1 5	27.9	28 7	21 3	17 6	3 0	....	.....	.....
		56,490	2 40	1 32	45.0	1919	41 2	.....	57 7	1 1	....	....	....	0.2	22.9	27.2	23 5	21 3	4 9	....	....	.....
		49,754	2 65	1 11	58 1	1920	40.7	.....	58 5	0 8	....	....	....	0.7	21.3	28 1	19 6	26.3	4 0	....	.....	.....
16-B	Cottonwood Irrigation and Mining Co. (*c*) (*d*)	*e*470	*e*1 61	.....	1913	.....	.....	.....	.....	.....	....	....	....	1 6	31.2	10 2	28 8	23.8	4.4	....	.....	.....
		*e*480	.....	*e*1 34	.....	1914	.....	.....	.....	.....	....	....	....	4 9	18.8	33.2	26.7	8.2	5.8	2.3	....	.....
		*e*490	.....	*e*1 21	.....	1915	.....	.....	.....	.....	....	....	....	4 5	16 1	39.4	27 8	5 6	3.0	3 6	.....	.....
		*f*500	.....	*f*1.38	.....	1916	.....	.....	.....	.....	....	....	....	3.5	10.4	32 6	26.7	21.4	4.8	0 6	.....	.....
		*e*490	.....	*e*1 40	.....	1917	.....	.....	.....	.....	....	....	....	.	10.9	31 9	28 2	9 8	5.6	4.5	4 3	4.8
		*e*620	.....	*e*0 71	.....	1918	.....	.....	.....	.....	....	....	....	21 6	68 4	9 9	0.1	....	....	....	....	.....
		*e*900	.....	*e*1 26	.....	1919	.....	.....	.....	.....	....	....	....	6.3	20 7	23.4	19.1	12.5	11.8	3 6	2.6	.....
		*e*1,200	.....	*e*0 74	.....	1920	.....	.....	.....	.....	3.5	3.2	3.5	16 1	32 3	22.2	7.5	....	....	.....	.....	11 7
16-D	Little Shasta River (*g*) (*h*)	4,498	4.20	.....	.....	1912	.....	.....	.....	*x*	....	....	....	....	.....	....	....	....	.....	.....	.....	.....
16-D	Little Shasta Valley Springs (*h*)	165	.....	7.35	.....	1912	....	....	....	*i*	....	....	....	....	.....	....	....	.....	.....	.....	.....	.....
16-D	Terwilliger No. 1 (*g*) (*h*)	180	1 61	.....	.....	1912	*x*	.....	.....	*x*	....	....	.....	....	22.0	31.0	29.0	7.0	11.0	.....	.....	.....
16-D	Terwilliger No. 2 (*g*) (*h*)	.....	.....	.....	.....	1912	.....	.....	.....	.....	....	....	.....	15 0	14.0	21.0	22.0	15.0	13.0	.....	.....	.....
16-D	Soule and Terwilliger (*g*) (*h*)	365	6.60	.....	.....	1912	.....	.....	.....	*x*	....	....	....	21.0	20 0	16 0	14.0	13.0	16.0	.....	.....	.....
16-D	Company Canal (*g*) (*h*)	625	4 90	.....	.....	1912	.....	.....	.....	*x*	....	....	.....	26 0	23.0	17.0	10 0	11.0	13.0	.....	.....	.....
16-D	Babcock, Soule and Martin (*g*) (*h*)	418	5.20	.....	.....	1912	.....	.....	.....	.....	....	....	....	21 0	33.0	21.0	4 0	5 0	16.0	.....	.....	.....
16-D	Hart and Hoyt (*g*) (*h*)	1,665	1.30	.....	.....	1912	.....	.....	.....	*x*	....	....	.....	19 0	19.0	16.0	16 0	8.0	22.0	.....	.....	.....
16-D	Smith Canal (*g*) (*h*)	100	6.40	.....	.....	1912	....	.....	.....	*x*	....	....	.....	.....	55.0	38.0	1 0	.....	6.0	.....	.....	.....
16-D	Haight, Dexter, and Kegg (*g*) (*h*)	645	3.90	.....	.....	1912	....	.....	.....	.....	....	....	....	19 0	20.0	13.0	13 0	17.0	18 0	.....	.....	....
16-D	Kegg (*g*) (*h*)	170	5.70	.....	.....	1912	.....	.....	.....	.....	....	....	....	16 0	17 0	16.0	17.0	17.0	17.0	.....	.....	.....

REMARKS—(*a*) Includes entire project in Oregon and California. (*b*) From Reclamation Record, U. S. R. S. (*c*) Water diverted from Cottonwood Creek to irrigate near Hornbrook. (*d*) From An. Rpts. of company to State R. R. Comm. (*e*) Estimated. (*f*) Measured. (*g*) Shasta Valley. (*h*) From 4th Bien. Rpt., State Dept. of Eng. (*i*) Pasture. (*x*) These crops irrigated; area unknown.

TABLE 8—(Concluded). USE OF WATER AS MEASURED ON VARIOUS SYSTEMS.

Section and key letter.	System.	Area irrigated.	Annual use in depth on land.		Loss of diverted water in conveyance.	Year.	Area of crops in per cent of total.				Monthly use in per cent of annual use.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct.		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct
16-D	Martin (*a*) (*b*)	165	8 70	.....	....	1912	.	.....	.	.	....	....	....	18 0	18 0	16 0	16 0	16 0	16 0	....	....	.
16-D	Stallcup Farm, Little Shasta Valley (*b*)	310	....	9 03	....	1912	100 0	.....	.	.	....	....	....	.....	.	..	....	.....	..	.....	....	
16-I	Pit River Ditch and Dam Co. (*c*)	950	4 16	3 75	9 9	1910	30 0	.....	30 0	40 0	....	.....	....	.	.	....	..	.....	.	.	....	
16-I	Thirty-two tracts on Pit River (*d*)	31,700	....	2 00	. .	.....	.	.	.	..	....	....	.	.	.	.	.	....	.	.	.	
16-J	Pit River Valleys, near Alturas	.....	....	(*e*)2 00	....	.	100 0	.	.	..	....	....	....	.	.	.	.	.	.	....	....	.
		.....	....	(*e*)2 00	.	.	.	....	100 0	(*g*)100 0	....	....	....	.	.	.	.	.	.	....	....	.
		.....	....	(*f*)3 00	.	.	100 0	.	.	(*g*)100 0	....	....	....	.	.	.	.	.	.	....	....	.
			....	(*d*)1 00		....																
			....	(*d*)2 00		....				(*h*)100 0												
			....	(*f*)3 00		....																
			....	(*d*)4 00		....																
16-L	Jess Valley (*i*)	25,000	2 67	2 00	25 0	1920	(*k*)		(*k*)	(*k*)							(*l*)	(*l*)				
16-N	Union Land and Stock Co. (*j*)		....	1 00	.	1861																
16-P	Lassen Irrigation Co. (*c*)	5,000	..	2 07	..	1910	100 0	.												..		
16-S	Round Valley Reservoir (*b*)	. .	2 00		. .	*l*	....												....	....	....	....

REMARKS—(*a*) Shasta Valley. (*b*) From 4th Biem. Rpt., State Dept. of Eng. (*c*) From 13th U. S. Census, 1910. (*d*) From A. M. Green, Alturas. (*e*) Estimated. (*f*) By W. J. Dorris, Alturas. (*g*) Meadow. (*h*) Water grass in lake bottoms. (*i*) From U. S. R. S. Rpt., by E. T. Erickson, Orland. (*j*) From Rpt. on irrigation for Honey Lake Land Co., by Taylor, Grunsky and Minto. (*k*) To irrigate in Indian Valley. (*l*) From J. A. Bumgar, Oroville. (*m*) Water used; quantity unknown. (*n*) Three crops irrigated; area unknown.

TABLE 9. USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross.	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct	P.ct.	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct	P.ct.
1-B	Santa Clara River Valley, Ventura County. (a)																					
	C. E. Tait. (n)	120,000	1.50	1 00	33 3	1912	....	x	x	x	....	....	....	....	....	....	....	....	....	....	....	....
	C. E. Tait. (n)	.....	.....	3 00	....	1912	100 0	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
1-C	San Fernando Valley, Los Angeles County. (a)																					
	C. E. Tait. (n)	105,000	.....	2 00	.....	1912	x	x	x	x	....	....	....	....	....	....	....	....	....	....	....	....
	Bd. Pub. Service Comm.	.....	.....	2.00	.....	.....	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
1-G	San Gabriel Valley. (a)																					
	C. E. Tait. (n)	70,000	2 00 to 3 00	.....	.....	1912	x	x	.....	x	....	....	....	....	....	....	....	....	....	....	....	....
1-M	Pomona Valley and Cucamonga Plains. (a)																					
	C. E. Tait. (n)	55,000	.....	0 80	.....	1912	.....	100 0	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
	C. E. Tait. (n)	.....	.....	2 40	.....	1912	100 0	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
1-Q	San Bernardino Valley and Riverside Area. (a)																					
	C. E. Tait. (n)	100,000	.....	1 00 to 2 00	.....	1912	.....	100 0	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
	C. E. Tait. (n)	.....	.....	b3 50	.....	1912	100 0	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
1-R	Temescal Water Co. (c) (d)																					
	H. R. Case. (o)	.....	.....	2 00	.....	.....	.....	.....	.....	.....	....	....	....	y	y	y	y	y	y	y	y	.....
1-R	San Jacinto Valley and Corona Area. (a)																					
	C. E. Tait. (n)	40,000	....	e2 00	.....	1912	.....	100 0	.....	.....	....	....	....	f	....	....	....	....	....	....	....	....
1-S	Santa Ana River Lands. (a)																					
	C. E. Tait. (n)	g279,000	.....	h1 35	.....	1912	.....	k100 0	.....	.....	....	....	....	f	....	....	....	....	....	....	....	....
	C. E. Tait. (n)	.....	.....	i1 00	....	1912	.....	l100 0	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
	C. E. Tait. (n)	.....	.....	j3.50	.....	1912	100.0	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....
1-T	Orange County Coastal Plain and Mesa. (a)																					
	C. E. Tait. (n)	60,000	.....	m1.30	.....	1912	.....	.....	.....	.....	....	....	....	f	....	....	....	....	....	....	....	....

REMARKS—(a) From Rpt. of Conservation Comm. of the State of California, 1912. (b) On a basis of 1 miner's inch for 2 or 3 ac. (c) Lands near Corona. Season 260 days. (d) From State Dept. Pub.Wks.,Div. of Eng. and Irrig. files. (e) On a basis of 1 miner's inch for 5 ac. (f) Irrigation season 250 days. (g) Includes Pomona Valley and Cucamonga Plains; San Bernardino Valley and Riverside; Yucaipa Valley and San Gorgonio Pass; San Jacinto Valley and Corona; Orange County Coastal Plain and Mesa areas. (h) On basis of 1 miner's inch for 7 or 8 ac. (i) On basis of 1 miner's inch for 10 ac. (j) On basis of 1 miner's inch for 3 ac. (k) Citrus. (l) Deciduous. (m) On a basis of 1 miner's inch for 5 to 10 ac. (n) Of Los Angeles. (o) Of Corona. (x) These crops to be grown; areas not estimated. (y) Water to be used; quantity not estimated.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use, in per cent of annual supply.											
			Gross.	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
2-A	Yucaipa Valley and San Gorgonio Pass. (a)																					
	C. E. Tait. (d)	21,000		b1 00		1912								c								
2-D	Vulcan Land & Water Co. (e)																					
	J. B. Lippincott. (d)			2 00																		
	J. S. Longwell. (f)			1 50																		
2-D	San Dieguito Mutual Water Co. (e)																					
	J. S. Longwell. (f)			1 50																		
2-D	San Luis Rey, Escondido, San Ysabel Valleys and Linda Vista Mesa. (a)																					
	C. E. Tait. (d)	51,600		b1 00		1912								g								
2-D	Linda Vista Mesa. (h)																					
	C. E. Tait. (d)			1 00		1920		100 0														
	C. E. Tait. (d)			1 50		1920				100 0												
2-F	Spring Valley Irrigation Dist. (e) (i)																					
	J. B. Lippincott. (d)	12,000		1 00		1911																
2-E	Sweetwater Valley and Chula Vista Mesa. (a)																					
	C. E. Tait. (d)	7,500		1 00		1912																
2-E	El Cajon Valley. (e)																					
	J. S. Longwell. (f)			1 50																		
	Ed. Fletcher. (d)			j1 00																		
2-E	Otay and Tia Juana Valleys. (a)																					
	C. E. Tait. (d)	3,000		b1 00		1912																
3-F	Imperial Valley																					
	C. E. Tait. (a) (d)	400,000		1 75		1912																
	C. E. Tait. (d) (e).			3 00		1922																
3-I	Yuma Project, U. S. R. S.																					
	U. S. R. S. (k).	65,060		3 00		1921					x	x	x	x	x	x	x	x	x	x	x	x

Remarks. (a) From Rpt. of Conservation Comm. of the State of California, 1912. (b) On a basis of 1 miner's inch to 10 ac. (c) Irrigation season 250 days. (d) Of Los Angeles. (e) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files. (f) Of Powell, Wyo. (g) Irrigation season 270 days. (h) Rpt. on use of water on Linda Vista Mesa, U. S. D. A. (i) Consulting Engr's. rpt. to La Mesa, Lemon Grove and Spring Valley Irrigation Dist. (j) Water to be used in East San Diego. (k) 20th An. Rpt., U. S. R. S. (x) Water to be used, quantity not estimated.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth of land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.										
			Gross	Net.			Alfalfa	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P.ct	P ct	P ct	P.ct	P.ct	P.ct.
4-A	Palmdale Water Co.																					
	J. B. Lippincott. (a) (b)	6,000	1 00			1915		100 0														
	F. C. Finkle. (b) (c)	6,000	1 00		g	1916		100 0														
4-A	Palmdale Irrigation Dist. (d) (e)		[1 36																			
	Frank Adams. (f)	4,400	to		g	1918		100 0														
			2 36]																			
4-D	Mojave River Irrigation Dist. (h)																					
	J. B. Lippincott. (b)	117,092		1 50		1921							10 0	14 0	16 7	18 0	18 0	16 0	7.3			
4-D	Victor Valley Irrigation Dist. (j)																					
	J. B. Lippincott. (b)	k67,000		1 00		1917																
	J. B. Lippincott. (b)	l5,200		1 50		1917																
4-D	Victor Valley. (m)																					
	(m)	325,000		n1 36		1917	xo	x		xo												
	(m)	44,000		k1 25		1917	xo	x		xo												
	(m)	269,000		l1 50		1917	xo	x		xo												
5-A	Newlands Proj., U. S. R. S.																					
	L. H. Taylor. (p) (q)		4 50	2.70		1917																
	D. C. Henny. (r) (s)		4 14																			
	U. S. R. S. (t)	187,000		3 00		1921								uy	y	y	y	y	y	y		
5-C	Bishop Creek Canal. (v)																					
	T. H. Means. (w) (z)	11,400	2 83	2.30	18 7	1921	50 0		25 0	25 0				10 0	14 0	21 0	21 0	18 0	16.0			
6-A	Oakdale Irrigation Dist.																					
	W. F. McClure. (aa)	62,000		2 50		1914				100 0												
	H. H. Wadsworth. (h) (w)	25,000		bb2 50		1920	100 0							y	y	y	y	y	y			
	Burton Smith. (h) (gg)			bb3 00		1920	100 0															
	H. H. Wadsworth. (h) (w)	27,000		1 50		1920		100.0					y	y	y	y	y	y	y			
	H. H. Wadsworth. (h) (w)	5,000		bb6 00		1920			cc	100 0				y	y	y	y	y	y			
	H. H. Wadsworth. (h) (w)	57,000		bb2 50		1920				100 0			y	y	y	y	y	y	y			
6-B	Waterford Irrigation Dist.																					
	W. F. McClure. (dd)	66,960		ee1 50	10 0	1918								11 0	19.0	18 0	17 0	17 0	16 0	3 0		
	W. F. McClure. (dd)	3,600		ff2 50	20 0	1918								16 0	21 0	19 0	19 0	5 0	2 0	2 0		

REMARKS—(a) Rpt. to company. (b) Of Los Angeles. (c) Rpt. to Sheldon and Lancaster of Los Angeles. (d) Rpt. to State Engr. (e) The Palmdale Irrigation Dist. succeeded the Palmdale Water Co.; 6,000 is the gross area and 4,400 the net area of dist. (f) Of Berkeley. (g) Concrete lining contemplated. (h) From rpt. to dist. (i) Net acreage. (j) Rpt. to dist. (k) West Mesa. (l) East Mesa. (m) Rpt. of Mojave River Comm. (W. F. McClure, J. A. Sourwine and C. E. Tait) to the Supervisors of San Bernardino County. (n) Includes partial area proposals in *k* and *l*. (o) "The proportions of these crops should not be large." See note (*m*). (p) For East Carson River from canal measurements by U. S. R. S. and area measurements by L. H. Taylor. (q) Of Reno, Nevada. (r) From Water Supply of Truckee-Carson Proj., filed with Anpl. 495, Div. of W. Rts. (s) Of Portland, Ore. (t) From 20th An. Rpt., U. S. R. S. (u) Season Apr. 1 to Oct. 15, 198 days. (v) From case of Hillside Water Co. vs. Wm. A. Trickery before A. E. Chandler, arbitrator, July, 1921. (w) Of San Francisco. (x) These crops to be grown; areas not estimated. (y) Water to be used: quantity not estimated. (z) Plaintiff's Engineer. (aa) In State Bond Comm. rpt. on dist. (bb) These proposals omitted from summary of Sec. 6, as they give excessive weight to one locality not wholly typical of the Section. (cc) Rice. (dd) By State Engr. (ee) Hilly Lands. (ff) Valley lands. Duty based on alfalfa requirements. (gg) Of Stockton.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
6-E	Lindsay-Strathmore Irrigation Dist. (*a*) S. E. Kieffer. (*b*)	13,410	1 90	1.75	8 0	1916	. . .	100 0	..	.....	*c*			. .	....	....	....	.....	....	....	....	....
6-F	Terra Bella Irrigation Dist. S. E. Kieffer. (*b*) (*d*)	10,000	1 65	1 50	10 0	1915	....	100 0	.....		*f*	.	.	.	....	....	....	....	....	....	....	....
	S. E. Kieffer. (*b*) (*e*)	.....	1 67	1 50	10 2	1921	...	100 0	....	...	*g*	....	.	.	....	....	....	....	....	....	....	....
6-F	Lindsay-Strathmore and Terra Bella Irrigation Dists. Areas. S. E. Kieffer. (*b*)	.....	1 50	1 00	33 3	*h*		100 0	. . .	..	....	.	.	.	....	....	....	....	....	....	....	....
7-A	Woodbridge Area, U. S. R. S. A. N. Burch. (*i*) (*j*)	51,000		2 25		1918																
-A	Stockton Area. (*k*) S. T. Harding (*j*), and R. D. Robertson	20,000	2 50	....	..	1912	*x*	*x*	*x*	*x*	.	.										
7-B	Lone Tree Irrigation Dist. (*c*) A. Kempkey. (*b*)	2,107		2 00		1921			.	100 0	..	.										
7-B	Knightsen Irrigation Dist. (*m*) J. B. Brown. (*n*)	8,702	3 50	1 20 to 2 00	.	1920			.	100 0												
7-C	West Side Irrigation Dist. (*c*) W. G. Hunter. (*o*)	11,500	3 00	2 10	30 0	1915	.	.	. .	100 0	.	.		*p*	*p*	*p*	*p*	*p*	*p*			....
7-C	Byron-Bethany Irrigation Dist. F. H. Tibbetts. (*b*) (*c*)	13,000	2 50	2 00	20 0	1920	*x*	.	. .	100 0	.	.		*p*	.	.	.	.	.			.
	S. C. Whipple. (*m*) (*n*)	13,000	2 50	2 00	20 0	1920				100 0												
7-C	Nagler-Burke Irrigation Dist. (*m*) S. C. Whipple. (*n*)	*3,346	2 50	. . .	.....	1920			.	100 0	.	.	.	*q*	.	.	.	.	.	.	.	.
7-C	Kasson Irrigation Dist. (*m*) S. C. Whipple. (*n*)	2,107	2 50	. .	.	1920		.		100 0	.	.	.	*p*	*p*	*p*	*p*	*p*	*p*	*p*		.
7-C	Banta-Carbona Irrigation Dist. S. C. Whipple. (*m*) (*n*)	18,850	2 50	2 50	. . .	1920	.	. .	..	100 0	..	.	....	*p*	*p*	*p*	*p*	*p*	*p*	.		.
	J. B. Brown (*n*) and Dist. Engr. (*r*) (*s*)	15,000	3 00	2 50	20 0	1922	.	..	..	....	....	....	14 0	12 0	16 0	21 0	20 0	16 0	9 0	2 0		..
7-D	West Stanislaus Irrigation Dist. (*c*) L. N. Bryan. (*n*)	35,681		2 25	.	1921	.	.	. .	....	....	....	.	.	.	..						..

REMARKS. (*a*) From rpt. to Bond Comm. by W. L. Huber. (*b*) Of San Francisco. (*c*) Irrigation season 175 days. (*d*) Prelim. rpt. on dist. (*e*) From rpt. to dist. (*f*) Irrigation season from 150 to 200 days. (*g*) Irrigation season from 180 to 210 days. (*h*) Est. of use prior to formation of dists. (*i*) From rpt. on secondary project to Director, U. S. R. S. (*j*) Of Berkeley. (*k*) From Rpt. of Conservation Comm. of State of California, 1912. (*m*) From rpt. to State Engr. (*n*) Of Berkeley. (*o*) Of Stockton. (*p*) Irrigation season 175 days. (*q*) Irrigation season 180 days. (*r*) Report to State Engr. (*s*) By J. B. Brown. (*u*) Of Sacramento. (*x*) These crops to be grown; areas not estimated. (*y*) Water to be used, quantity not estimated.

TABLE 9.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P.ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P.ct	P.ct	P.ct	P.ct
7-E	South San Joaquin Irrigation Dist.																					
	W. F. McClure. (a) (b)	56,840	4 70	3 00	36 0	1913	....	....	....	100 0	....	....	....	....	y	y	y	....	....	....	....	....
	Edwin Duryea, Jr. (c) (d)	....	....	2 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7-F	Modesto Irrigation Dist.																					
	P. M. Norboe. (a) (b)	73,000	3 12	2 50	20 0	1914	....	....	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....
	B. A. Etcheverry (f) and T. H. Means (d)	....	....	e2 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7-H	Turlock Irrigation Dist. (a)																					
	P. M. Norboe. (b)	231,938	3 12	2 50	20 0	....	....	g	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7-H	Modesto and Turlock Irrigation Dists.																					
	Frank Adams. (f)	....	....	....	....	....	....	....	....	....	2 0	4 0	9 0	16 0	21 0	19 0	19 0	5 0	2 0	2 0	1 0	....
	A. J. Wiley. (i) (j)	....	....	....	....	....	....	....	....	....	....	....	5 0	16 0	17 0	17.0	17 0	16 0	12 0	....	....	....
	A. Griffin, B. South, H. H. Wadsworth. (k) (l)	....	....	....	....	....	....	....	....	....	2 0	3 0	4 0	8 0	15 0	16 0	16 0	14 0	13 0	6 0	2 0	1.0
	B. A. Etcheverry (f), and T. H. Means. (d) (m)	....	....	....	....	....	....	....	....	....	....	2 0	6.0	12 0	15 0	21 0	20 0	16 0	6 0	2 0	....	....
	J. R. Freeman. (o) (p)	206,000	2 80	n2 50	n19 5	....	....	....	....	....	....	0 7	8 4	16.3	19 9	19 6	19 9	11 6	2 5	1 0	0 1	....
	C. E. Grunsky. (d) (q)	....	....	....	....	....	....	....	....	....	1 0	2 0	4 0	8 0	15 0	20 0	18 0	15 0	10 0	5 0	1 0	1 0
	A. J. Wiley. (j) (r)	240,000	4 25	2 50	41 2	1918	....	....	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....
	A. J. Wiley. (j) (s)	240,000	3 75	2 50	33.3	1918	....	....	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....
	Geo. T. Prince. (u)	....	....	2 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	H. S. Crowe (v) and B. Smith (w) (x)	....	....	2 75	....	1912	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7-I	American Seedless Raisin Co. and vicinity. (aa)																					
	R. E. Robson. (d)	....	....	1 50	....	1921	....	....	x	....	....	....	....	bby	y	y	y	....	....	....	....	....
7-I	Merced Irrigation Dist. (cc)																					
	T. H. Means. (d)	140,000	3 05	dd2 40	....	1920	28 0	29 0	....	ee43 0	....	1 0	4 0	10 0	16 0	21 0	20 0	17 0	9 0	2.0	....	....
	T. H. Means. (d)	160,000	3 05	dd2 20	....	1920	28 0	30 0	....	ff42 0	....	....	....	....	....	....	....	....	....	....	....	....
	T. H. Means. (d)	188,000	3 05	dd2 20	....	1920	29 0	30 0	....	gg41 0	....	....	....	....	....	....	....	....	....	....	....	....
	T. H. Means. (d)	20,000	....	5 00	....	1920	....	....	....	hh100	....	....	....	....	18 0	24 0	22 0	22 0	14 0	....	....	....
	T. H. Means. (d)	....	....	2 50	....	1920	100 0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	T. H. Means. (d)	....	....	1 50	....	1920	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7-J	Modano Irrigation Dist. (e)																					
	T. H. Means. (d)	....	....	2 50	....	1921	100 0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	T. H. Means. (d)	....	....	1 00 to 2 00	....	1921	....	....	ii100.0	....	....	....	....	....	....	....	....	....	....	y	....	....
	T. H. Means. (d)	....	....	1 50	....	1921	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	T. H. Means. (d)	13,500	2 00	1 50	25 0	1921	....	....	....	100 0	....	....	....	....	....	....	....	....	....	....	....	....

REMARKS—(a) From rpt. to Irrigation Dist. Bond Comm. (b) State Engr., Sacramento. (c) From rpt. to dist. (d) Of San Francisco. (e) From rpt. on dist. (f) Of Berkeley. (g) Principal crop. (i) From rpt. to dist. (j) Of Boise, Idaho. (k) In rpt. on dists. (l) Griffin of Brooks, Alberta; Smith of Stockton; Wadsworth of San Francisco. (m) Based on a 5 year study. (n) One-quarter foot depth on land pumped from drainage waters and reapplied to lands making a net use of 2.25 feet depth on land. (o) The Hetch Hetchy Water Supply for San Francisco, 1912. (p) Of Providence, R. I. (q) Quoted by Etcheverry and Means. (r) By A. J. Wiley for 1918 conditions. (s) By A. J. Wiley assuming canals mostly lined. (u) Quoted by Etcheverry in rpt. to P. V. Long, San Francisco. (v) Of Oakdale. (w) Of Stockton. (x) These crops to be grown; areas not estimated. (y) Water to be used; quantity not estimated. (z) From Modesto and Turlock Irrigation Dist. Rpt., Irrigation Development Dependent on Tuolumne River Waters. (aa) From rpt. to T. H. Means. (bb) From Apr. 15 to July 15th. (cc) Rpt. to J. D. Galloway of San Francisco. (dd) In conclusion changed to 2.5 ft. depth on land, see note (cc). (ee) Rice, 14 per cent of total crop. (ff) Rice, 12 per cent of total crop. (gg) Rice, 11 per cent of total crop. (hh) Rice. (ii) Annuals.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P ct		P.ct.	P.ct.	P ct.	P ct.	P ct	P.ct	P.ct	P.ct	P ct	P ct	P ct	P ct	P ct	P.ct	P ct	P ct
7-J	California Packing Corp. *(a) (b)*	3,900		1 50				*c*														
	Owners																					
7-K	Chowchilla Irrigation Dist. *(d)*																					
	Harry Barnes. *(e)*			2 50		1919	100 0															
	Harry Barnes. *(e)*			1 25		1919		100 0														
	Harry Barnes. *(e)*	16,600	*f*3 10	1 87	40 0	1919	50 0	50 0														
	Harry Barnes. *(e)*	25,000	*g*2.10	1 87	10 0	1919	50 0	50 0														
7-M	Madera Irrigation Dist. *(h)*																					
	L. C. Hill. *(i)*	353,000		2 00		*l*1920				100 0		1 5	6 8	15 2	17 9	18 8	18 3	16 2	5 4			
	T. H. Means *(j)* and L. C. Hill (i)	*k* 280,000	2 90	2 25	20 0	1920				100 0			*m*8 0	12 0	12 0	18 0	18 0	16 0	16 0	6 0	4 0	
	T. H. Means *(j)* and L. C. Hill (i)	*k* 140,000		2 50		1920	100 0					*n*1 0	4 0	9 0	16 0	22 0	21 0	18 0	8 0	1 0		
	T. H. Means *(j)* and L. C. Hill (i)	*k* 70,000		1 50		1920		100 0														
	T. H. Means *(j)* and L. C. Hill (i)	*k* 70,000		1 50		1920			*o*100 0													
7-Q	San Joaquin Valley.			1 00																		
	Cope, Rand and Means. *(p) (j)*			to				100 0			*q*											
				1 50																		
				1 00																		
	Cope, Rand and Means. *(p) (j)*			to						*o*100 0												
				1 50																		
	Cope, Rand and Means. *(p) (j)*			2 50			100 0				*s*											
	S. T. Harding *(t)* and R. D. Robertson. *(u) (r)*	4,000,000	3 00			1912	*x*	*x*	*x*	*x*												
7-P	Fresno Irrigation Dist.																					
	G. L. Swendsen. *(w) (y)*	226,000		2 00		1920				100 0												
	W. L. Huber. *(h) (z)*	242,000	2 00			1921		60 0		40 0												
7-Q	Kings River Areas. *(u)*																					
	S. T. Harding *(t)* and R. D. Robertson	800,000	3 00	2 50	16 7	1912																
7-R	Island No. 3 Irrigation Dist.																					
	H. H. Blee. *(aa) (z)*		2 00			1920				100 0												
	I. Teilman. *(y) (w)*		2 58							100 0												
7-R	Consolidated Irrigation Dist. *(z)*																					
	W. L. Huber. *(y)*	150,000	2 00			1921		100 0														
7-S	Kings River Conservancy Dist.																					
	L. B. Lippincott. *(h) (u) (l)*																					
	Dist. Bd. Engrs. *(h) (bb)*	1,000,000	2 00			1916				100 0		2 0	6 0	12 0	20 0	20 0	14 0	10.0	7 0	7.0	2 0	
	Harry Barnes. *(cc) (e)*		1 50																			

Continued on next page.

REMARKS—*(a)* Location T. 7 S., R. 15 E., between Tuttle and Planada, 5 mi. east of Merced. Water pumped from wells. *(b)* Reported by R. E. Robson to Cope, Rand and Means, San Francisco. *(c)* Deciduous. *(d)* From rpt. by Harry Barnes to Daniel Hayes Co. of Chowchilla. *(e)* Of Madera. *(f)* Unlined ditches. *(g)* Lined ditches. *(h)* From rpts. various consulting engineers on district. *(i)* Of Los Angeles. *(j)* Of San Francisco. *(k)* Total area 350,000 ac., 20 per cent of gross area considered not irrigated. *(l)* Based on actual use on Fresno Canal. *(m)* By engineers of Madera Irrigation Dist. *(n)* By T. H. Means. *(o)* Annuals. *(p)* From rpt. to J. D. Galloway. *(q)* From 1 to 4 irrigations. *(s)* From 4 to 6 irrigations. *(t)* Of Berkeley. *(u)* From Rpt. of Conservation Comm. of the State of California, 1912. *(v)* Includes Stockton, West Side San Joaquin Valley, Kings River and Kern River areas. *(w)* Of Fresno. *(x)* These crops to be grown; areas not estimated. *(y)* From rpt. of I. Teilman. *(z)* From rpt. to State Engr. *(aa)* Of Sacramento. *(bb)* Consisting of G. L. Swendsen, Quinton Code and Hill, I. Teilman, J. B. Lippincott, Max W. Enderlein, A. D. Schindler and W. H. Schafer. *(cc)* From rpt. on dist.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Continued from page 175	Acres.	Feet.	Feet.	P ct		P.ct.	P ct.	P ct.	P.ct.	P ct	P.ct	P ct	P ct	P.ct	P.ct	P ct	P ct	P ct	P.ct	P ct.	P.ct.
7-S	Kings River Conservancy Dist.																					
	A. D. Schindler. (*a*) (*b*)	..	3 00	....	.....	.....	.....	.....	.....	.....	.....	2 7	8 3	14 3	17 3	21 0	20 0	11 0	5 3	.....	.....	.....
	L. C. Hill. (*b*) (*c*)	.....	2 50	.....	.....	.....	.....	.....	.....	.....	.....	0 8	6 0	13 2	18 0	18 8	18 0	17 2	8 0	.....	.....	.....
	T. H. Means. (*a*) (*b*)	..	2 00	..	.....	.....	.....	.....	.....	.....	.....	2 0	7 0	12 0	14 0	19 0	18 0	15 0	7 0	3 0	2 0	1 0
	I. Teilman. (*b*) (*d*)	.....	2 11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	I. Teilman. (*b*) (*d*)	.....	2 96	.....	.....	.....	.....	.....	.....	.....	2 0	4 0	12 0	18 0	28 0	26 0	8 0	2 0	.....	.....	.....	.....
	W. W. Enderlein and J. B. Lippincott. (*b*) (*e*) (*f*)	.....	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	7 5	15 0	20 0	20 0	17 5	12 5	7 5	.....	.....	.....
7-S	Foothill Irrigation Dist. (*g*) Harry Barnes. (*h*)	*k*58,000	1 50	.....	*i*	1920	.....	100 0	....	.....	.....	.....	.....	*j*	.....	.....	.....	.....	.....	.....	.....	.....
7-V	Tulare Lake Bed and Lower Valley Lands.																					
	W. W. Enderlein, H. L. Heffner, and J. B. Lippincott. (*c*)	332,750	1 00	.....	.....	.....	.....	.....	.....	100 0	.....	.....	5 0	15 0	20 0	20 0	15 0	10 0	15 0	.....	.....	.....
		332,750	1 00	.....	.....	.....	.....	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	50 0	25 0	25 0	.....
		332,750	1 00	.....	.....	.....	.....	.....	50 0	50 0	.....	.....	3 0	7 0	10 0	10 0	8 0	5 0	32 0	12 5	12.5	.....
7-W	Alpaugh Irrigation Dist. (*m*)																					
	Frank Adams (*n*) and S. W. Curtis	5,000	1 17	*o*3 33	20 0	1919	100 0	....	.....	.....	*p*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Frank Adams (*n*) and S. W. Curtis	1,850	2 08	1 66	20 0	1919	.	.....	.....	100 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7-Z	Kern River Areas. S. T. Harding. (*n*) (*q*)	292,100	2 90	2.20	21 0	1920	45 0	22 0	17 0	16.0	.....	.....	5.0	11 0	16.0	19 0	17 0	13 0	11 0	8 0	.....	.....
7-Z	Kern River Delta. (*r*) C. E. Tait. (*c*)	*s*176,000	2 50 to 3 00	.....	.....	1912	*x*	....	*x*	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8-B	West Side San Joaquin Valley. (*r*) (*t*) S. T. Harding (*n*) and R. D. Robertson	200,000	2 50	.....	.....	1912	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9-A	Atascadero Colony. (*u*) P. E. Fuller (*v*)	9,952	.....	1.95	.....	.....	....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9-C	Santa Maria and Cuyama Valleys (*r*) C. E. Tait. (*c*)	140,000	.....	1 00	.....	1912	....	.....	.....	*w*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9-D	Santa Barbara Coastal Plain. (*r*) C. E. Tait. (*c*)	25,000	.....	*y*1 00	.....	1912	.....	*x*	.....	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) Of San Francisco. (*b*) In rpt. to dist. (*c*) Of Los Angeles. (*d*) Of Fresno. (*e*) Of Los Angeles. (*f*) Ideal use on delta lands. (*g*) From rpt. to State Engr. (*h*) Of Madera. (*i*) Concrete lined ditches proposed. (*j*) Season 5 to 7 months. (*k*) Barnes rpt. indicates that it is unlikely that there will be sufficient stored water for 1.5 ft. use on 58,000 acres. (*m*) Rpt. to State Engr. (*n*) Of Berkeley. (*o*) Based on 1 sec. ft. to 144 acres. (*p*) Irrigation season 240 days. (*q*) From Bull. 9, State Dept. of Eng. (*r*) From Rpt. of Conservation Comm. of the State of California, 1912. (*s*) Area irrigated in 1912. (*t*) Area north of Tulare Lake, extending through Fresno County between the lower valley lands and the edge of the west side foothills. (*u*) Rpt. to John F. Sullivan, Mgr., Colony Holding Corporation. Land is divided into soil classes on which use varies from 1.5 to 2.5 ft. depth on land. (*v*) Of Mesa, Ariz. (*w*) Sugar beets in Santa Maria Valley. (*x*) These crops to be irrigated; areas not estimated. (*y*) Computed on a basis of 1 miner's inch to 10 ac. with a 250-day irrigation season.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P. ct		P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
10-C	Lower Salinas Valley. (*a*) S. T. Harding (*b*) and R. D. Robertson	46,000	2 00			1912	*x*	.....	*x*	*x*	....	..	...	....	.....	.....	.....	..	....	.....	...	.....
11-C	Santa Clara Valley in Santa Clara Co. (*c*)																					
	F. H. Tibbetts, (*d*) and S. E. Kieffer. (*d*)	....	.....	1 25		1920	.	100 0	.....		..	..	..	..	....	..	....	..	..	.....	...	.....
	F. H. Tibbetts (*d*) and S. E. Kieffer. (*d*)	.	.....	2 00		1920	.	.....	.....	100 0	..	..	..	..	....	..	....	..	..	.....	...	.....
	F. H. Tibbetts (*d*) and S. E. Kieffer. (*d*)	96,323	....	*e*1 42		1922	.	...	.....	...	....	..	..	..	....	..	....	..	..	.....	..	.....
12-A	Delta Lands of Sacramento and San Joaquin Rivers.																					
	G. S. Nickerson. (*f*) (*g*).....	.		2 00		1922				...			..									
	C. E. Grunsky. (*d*) (*h*).	170,000	1 69	1 53	19 5	1921	3 5	6 2	51 2	36 1	.	..	..	8 6	15 0	20 6	21 5	21 0	10 5	2 8	.	
13-A	Anderson-Cottonwood Irrigation Dist. (*j*)																					
	W. L. Huber. (*d*)	26,000	5.33	*k*1 00	33 3	1917		.			.		*l*	..	.					....	..	
	W. L. Huber. (*d*)	26,000		*m*3 05		1917														...		
13-B	El Camino Irrigation Dist. (*n*)																					
	S. C. Whipple.....			2 50		1920	100 0	.	.	.	..	..	..	.	.	.	.	.	.	....	..	.....
	S. C. Whipple..			1 50		1920	.	100 0	..	.			..	.	.	.	.	.	.	....	..	.....
13-C	Los Molinos Land Co. (*p*)																					
	W. R. Parkhill. (*q*).....	15,000	3 70	*r*2 40	35 1	1922	34 0	33 0		33 0			...	8 4	16 7	18 1	22 2	15 1	13 8	5.7		
13-D	Stanford Vina Ranch.																					
	Polk and Robinson. (*s*) (*t*)	1,711	3 75			1921	21 7	.	.	78 3	..	..	*u*	..	..	..	..	..	..	....	..	.
	Frank D. Robson. (*w*)	....	5 52	3 79	13 2	1921	*xy*	.	.	*x*	..	..	..	..	..	..	..	..	..	....	..	.
13-E	Lands under Iron Canyon Reservoir. (*z*)																					
	H. J. Gault and W. F. McClure. (*f*)	225,000	4 12	2 75	33 0	1920	...	.....	..	.	..	..	6 0	10 0	11 0	19 0	21 0	19 0	17 0	2 0	2 0	
13-F	Orland Project, U. S. R. S.																					
	U. S. R. S. (*aa*)	21,280	...	3.00	....	1922	...	.....	.....	.	.	.	.	....	.....	.....	.....	.....	.....	.....	.....	.....
13-Q	Cordua Irrigation Dist.																					
	A. D. Edmonston. (*bb*) (*j*).	6,240	4 40	3 50	20 0	1921	.....	.....	.....	.....	...	....	.....	16 0	17.0	17 0	17.0	17.0	16 0	.....	....	.....
	J. B. Brown. (*cc*)	4,340	...	2 90		1920	*x*	*x*	...	*ddx*												

REMARKS.—(*a*) From Rpt. of Conservation Comm. of the State of California, 1912. (*b*) Of Berkeley. (*c*) Rpt. to Santa Clara Val. Water Conservation Comm., 1921. (*d*) Of San Francisco. (*e*) Average use includes 10,281 acres in towns for which use of 1.31 ft. was allowed. (*f*) Of Sacramento. (*g*) Verbal. (*h*) From correspondence, C. E. Grunsky to Paul Bailey, July 13, 1922. (*i*) Evaporation only. (*j*) Rpt. of cons. engr. to dist. (*k*) Max. supply estimated. (*l*) Season counted on, 6½ months. (*m*) Max. supply estimated, counting on 5½ months season. (*n*) From rpt. to State Engr. (*p*) From rpt. to Federal Land Bank of Berkeley. (*q*) Of Berkeley. (*r*) On a basis of 2.8 ft. depth on land for alfalfa and miscellaneous crops and 1.6 ft. depth on land for trees and vines. (*s*) From rpt. to directors of Stanford Vina Ranch. (*t*) Of Chico. (*u*) Season 150 days. (*w*) Of Vina, California. (*x*) These crops grown; areas not estimated. (*y*) Major crop. (*z*) From joint rpt. to State and Iron Canyon Water Assn. (*aa*) From letter of Mgr. R. C. E. Weber, 1922. (*bb*) Of Palo Alto. (*cc*) Rpt. to State Engr. (*dd*) Rice.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALTIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use, in per cent of annual supply.											
			Gross.	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P. ct.		P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct	P. ct.
13-Q	Feather River Area. (*a*)																					
	Frank Adams. (*b*)	*c*305,000	3.00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	Frank Adams. (*b*)	*c*467,500	2.00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	Frank Adams. (*b*)	*d*610,000	3.00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
13-R	Feather River Irrigation Dist.																					
	J. W. Gross. (*e*) (*f*)	3,022	3.25	2.50	30.0	1920	.....	.....	.....	.....	.....	.....	.....	6.0	18.0	19.0	20.0	18.0	15.0	4.0	.....	.....
	Albert Givan. (*e*) (*f*)	3,300	4.66	3.50	33.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*k*23.0	.....	.....	.....	.....	.....
	J. B. Brown. (*g*)	3,027	.....	2.50	.....	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-L	Jacinto Irrigation Dist. (*i*)																					
	Chas. de St. Maurice. (*j*)	2,100	7.00	.....	.....	1920	.....	.....	.....	100.0	.....	.....	.....	*k*7.1	14.3	21.4	21.5	21.4	14.3	.....	.....	.....
	Chas. de St. Maurice. (*j*)	9,100	*l*3.50	.....	.....	1920	.....	.....	.....	*m*100.0	.....	.....	.....	*k*5.2	8.7	16.6	24.1	25.0	17.3	3.1	.....	.....
13-M	Princeton-Cadora-Glenn Irrigation Dist. (*a*)																					
	Chas. de St. Maurice. (*j*)	2,800	7.00	.....	.....	1917	.....	.....	.....	100.0	.....	.....	.....	*k*7.1	14.3	21.4	21.5	21.4	14.3	.....	.....	.....
	Chas. de St. Maurice. (*j*)	12,000	*l*3.50	.....	.....	1917	.....	.....	.....	*m*100.0	.....	.....	.....	*n*5.3	8.7	16.3	24.0	25.0	17.4	3.3	.....	.....
13-M	Glenn-Colusa Irrigation Dist.																					
	F. H. Tibbetts. (*p*) (*q*)	303,470	3.80	*r*3.00	21.0	1921	.....	23.1	.....	*s*76.9	.....	.....	.....	*t*4.8	16.8	20.4	22.7	21.7	12.3	1.3	.....	.....
	F. H. Tibbetts. (*q*) (*u*)	7,400	.....	4.90	33.0	1921	.....	.....	.....	*v*100.0	.....	.....	.....	6.2	18.9	20.4	21.6	19.3	11.9	1.7	.....	.....
	F. H. Tibbetts. (*p*) (*q*)	93,870	6.33	5.00	21.0	1921	.....	.....	.....	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-N	Provident Irrigation Dist. (*g*)																					
	P. M. Norboe	20,756	5.00	.....	.....	1918	.....	.....	.....	*w*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-N	Rice Lands of Sacramento Valley. (*y*)																					
	Frank Adams. (*b*)	.....	.....	5.00	.....	1920	.....	.....	.....	*z*100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-U	Sacramento Valley. (*a*)																					
	Frank Adams. (*b*)	2,500,000	3.00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-V	Sacramento-Lincoln Area.																					
	Frank Adams. (*b*)	250,000	3.00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13-X	Yolo Water and Power Company.																					
	C. E. Grunsky. (*bb*) (*q*)	*cc*30,000	2.67	2.00	25.0	1914	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	C. E. Grunsky. (*dd*) (*q*)	20,000	3.55	2.67	25.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	C. E. Grunsky. (*ee*) (*q*)	47,000	3.20	2.40	25.0	1912	.....	.....	.....	.....	.....	.....	.....	23.8	20.0	15.1	13.7	13.7	13.7	.....	.....	.....

REMARKS—(*a*) From Rpt. of Conservation Comm. of the State of California, 1912. (*b*) Of Berkeley. (*c*) Counting on reservoir water for Aug. and Sept. only. (*d*) Counting on reservoir water for July, Aug. and Sept. (*e*) Of Sacramento. (*f*) From rpt. to dist. (*g*) From rpt. to State Engr. (*h*) Month of max. use. Use in other months not given. (*i*) Irrig. dist. engr's. rpt. (*j*) Of Colusa. (*k*) Based on power required for pumping in 1913, 1914, and 1915 by Sac. Val. W. Side Canal Co. (*l*) Est. on a basis of 7.0 ft. depth on land for rice and 2.5 ft. depth on land for miscellaneous crops. (*m*) Rice, 23 per cent of total crops. (*n*) Based on power required for pumping during 1913 and 1914. (*o*) From rpt. on dist. (*p*) From rpt. on further development of Glenn-Colusa Irrigation Dist. (*q*) Of San Francisco. (*r*) Estimated on a basis of 5.0 ft. depth on land for rice, 2.5 ft. depth on land for miscellaneous crops, and 1.5 ft. depth on land for trees and vines. (*s*) Rice, 30.9 per cent of total crops. (*t*) Taken from curve prepared by Tibbetts. (*u*) From rpt. on Sac. Val. W. Side Canal. (*v*) Rice, 59 per cent of total crops. (*w*) Major crop is rice. (*x*) Water to be used; quantity not estimated. (*y*) From 7th Bien. Rpt., State Engr. and Bull. 325, Univ. of Calif., Agr. Exp. Sta., for clay adobe soils. (*z*) Rice. (*bb*) From rpt. to Yolo Water and Power Co. on Little Indian Valley Reservoir. (*cc*) Gross area. (*dd*) Computed for net acreage from Grunsky's rpt. to Yolo Water and Power Co. (*ee*) From rpt. on the development of Clear Lake Reservoir.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use, in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees. Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct.		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct
13-X	Woodland Area. (*a*)																					
	Frank Adams. (*b*)	c97,570	c3 00	.....	. . .	1912	*y*	*y*	.....	*y*	.....	.....	.....	.....	.....	.	.....	.....	.....	.....	.....	.....
13-Y	East Dixon Irrigation and Drainage Assn. (*d*)																					
	Rosenthal and Davis. (*e*)	.. ..	.....	2 50	. . .	1921	*f*	.....	.....	.....	.....	.....	.....	..	.....	.	.....	.....	.....	.....	.....	.....
13-Z	Suisun Irrigation Dist. (*g*)																					
	G. L. Dillman and E. L. Cope. (*e*)...	26,173	2 00	1 50	25 0	1922	.....	.....	.....	.....	.....	.....	.....	.....	.....	.	.....	.....	.....	.....	.....	.....
13-Z	Suisun Area. (*h*)																					
	S. C. Whipple.	33,000	2 67	2 00	25 0	1920	....	.....	.....	.....	.....	.....	.....	..	.	.	.....	.....	.	.....	.....	.....
14-A	Jas. Mills Orchard Corp. (*j*)																					
	D. B. Macoun .. .	1,529	....	k1 80 to 2.70	. ..	....	....	100 0	.....	.....	.....	.....	.....	*lz*	*z*	*z*	*z*	*z*	*z*	*z*	*z*	. .
14-B	Elder Creek Area. (*m*)																					
	S. E. Kieffer. (*e*)	20,000	....	1 50	.....	1913	...	..	.....	...	..	..		*x*	*x*	*x*	*x*	*x*	.	..		
14-C	Happy Valley Irrigation Dist. (*m*)																					
	Symmes and Means. (*e*) .	14,000	1 25	1 00	20 0	1917	..	100 0	...	....	.			5 0	25 0	30 0	25 0	15 0	..		....	
14-D	Paradise Irrigation Dist.																					
	I. E. Goodner. (*n*) (*o*)	7,000	.....	1 00	.....	1916	.	100 0	....	..	.....	.		*r*	..						..	..	
	L. M. Edwards. (*p*) ..	9,500	. . .	1.00	.....	1921	..	100 0	.	.....	....	.		..							...	
14-F	Oroville-Wyandotte Irrigation Dist.																					
	S. J. Norris. (*m*) (*s*) ...	25,000	2 00	1 50	25 0	....	..	100 0	.....	.....	.....	.....	.....	.....	..	.	..	..				
	S. J. Norris and I. C. Hess. (*m*) (*s*).	.....	2 50	.....	.....	....	..	.	....	..	.	.		..	*t*	*x*	*x*	*x*	*x*	*x*		
14-G	Palermo Land and Water Co.																					
	C. H. Loveland. (*u*) (*v*)	.....	.....	1 40	....	1915	...	....	.....	.....	...	...	...	...	..	.	....	.....	.....	.	.....	
14-H	Honcut-Yuba Irrigation Dist.																					
	Frank Adams. (*c*) (*w*) ...	.	.....	z2 00	.	1919	..	...	.....	.....	..	.	...	...	...	...	...	...	...	..	...	.
	S. C. Whipple. (*h*)	22,500	.....	2 00	...	1920	50 0	50 0	..	...				5 0	15 0	20 0	25 0	20 0	15 0	.	..	

Continued on next page.

REMARKS—(*a*) From Rpt. of Conservation Comm. of the State of California, 1912. (*b*) Of Berkeley. (*c*) This figure presupposes a storage of 200,000 ac. ft. in Clear Lake and 50,000 ac. ft. in Little Indian Valley. (*d*) Rpt. to assn. (*e*) Of San Francisco. (*f*) Major crop. (*g*) Rpt. to dist. (*h*) From rpt. to State Engr. (*j*) From data of late D. B. Macoun, Supt. (*k*) Old citrus orchards, 1.8 ft. depth on land. Young citrus orchards 2.7 ft. depth on land. (*l*) Irrigation season 225 days. (*m*) From rpt. on dist. (*n*) With Columbia Basin Survey Comm., Olympia, Wash. (*o*) From rpt. on dist. (*p*) From rpt. to State Water Comm. by Supt. Edwards, Paradise, Calif. (*r*) Irrigation season 150 days. (*s*) Of Oroville. (*t*) Irrigation season from May 15 to Oct. 15. (*u*) Then Hyd. Engr. for State R. R. Comm. (*v*) From Irrig. Inv. rpt. (*w*) Of Berkeley. (*x*) Water to be used; quantity not estimated (*y*) These crops to be grown; areas not estimated. (*z*) Based on 2.5 ft. depth on land for alfalfa and 1.5 ft. depth on land for trees and vines.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use. in per cent of annual supply.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
	Continued from page 179.	Acres.	Feet.	Feet.	P.ct.		P ct.	P ct.	P.ct.	P et.	P et	P et	P.ct	P ct.	P.ct	P ct	P.ct	P.ct	P ct	P ct	P.et	P.et
14-H	Honcut-Yuba Irrigation Dist.																					
	F. F. and V. T. McCray. (*a*) (*b*).....	30,000	2 00	1 50	25 0	1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	J. D. Galloway. (*c*) (*d*).....	25,000	3 30	2 54	25 0	1921	10 0	40 0	25 0	*e*25.0	.....	.....	3 0	7 0	16 0	22 0	21 0	19 0	11.0	1.0	.....	.....
	S. J. Norris. (*f*) (*g*).....	40,000	3 33	2 50	25 0	1921	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	E. C. Eaton. (*h*) (*i*).....	24,000	2 75	2.50	9 1	1922	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	J. M. Howells. (*c*) (*j*).....	.....	2 67	2 00	33 0	1922	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-H	Grizzly Creek Area. (*k*)																					
	Norris and Hess. (*f*).....	27,000	3.00	2 00	33 0	.....	.....	.....	.....	.....	.....	.....	.....	4 0	15.0	19 0	20 0	20 0	15.0	7.0	.....	.....
14-I	Nevada Irrigation Dist.																					
	F. H. Tibbetts. (*c*) (*d*).....	87,715	3 00	*l*2 50	*m*17 0	1921	10 0	10 0	..	80 0	.....	.....	.....	*n*7 5	17 5	20 0	20 0	20 0	15 0	.....	.....	.....
	A. N. Burch. (*o*) (*p*).....	70,170	.....	2 50	...	1921	.....	.....	.....	100.0	.....	.....	5.0	8 3	11.7	15.0	21 7	25 0	13 3	.....	.....	.....
14-J	Browns Valley Irrigation Dist.																					
	E. T. Eriekson. (*q*) (*r*).....	.....	.....	2.50	....	1919	.....	.....	.....	..	.....	.....	5.0	8.3	11.7	15 0	21 7	25 0	13.3	.....	.....	.....
14-K	Los Verjels Land and Water Co. (*s*)....	4,000	2 00	..	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	F. M. Turner. (*t*).....	.....	2 00	1 50	25 0	1922	....	*y*	..	*y*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-L	Yuba-Nevada-SutterWater& PowerAssn.																					
	H. L. Englebright. (*u*).....	90,000	2 50			1920	.....	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
14-L	Feather River Area. (*v*)																					
	Frank Adams. (*o*).....	305,000	3 00	.	*w*	1912	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	Frank Adams. (*o*).....	467,500	2 00		*w*	1912	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	Frank Adams. (*o*).....	610,000	3 00		*z*	1922	.....	.....	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
14-M	Coon Creek Area.																					
	M. J. Gillman (*c*) and Geo. S. Nickerson. (*h*) (*aa*).....	.....	....	1 50	.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-N	Placer County Fruit Lands.																					
	Frank Adams. (*o*) (*v*).....	104,000	.....	*bb*1.29	...	1912	.....	100 0	.....	.....	.....	.....	.....	*x*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
	B. A. Etcheverry (*o*) and T. H. Means. (*c*).....	.....	.....	1 13	.....	1915	.....	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-P	Sierra Foothills. (*w*)																					
	Frank Adams. (*o*).....	200,000	*cc*2 00	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14-Q	Placerville Area. (*dd*)																					
	A. T. Mitchelson. (*o*).....	.....	.....	1 50	*ee*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

REMARKS—(*a*) Of Palo Alto. (*b*) Dist. engr's. rpt. to dist. (*c*) Of San Francisco. (*d*) Consulting engr's. rpt. to dist. (*e*) Rice. (*f*) Of Oroville. (*g*) Rpt. to dist. (*h*) Of State Dept. Pub. Wks., Div. of Eng. and Irrig. (*i*) Rpt. on dist. (*j*) Consulting Engr's. rpt. (*k*) From review by Norris and Hess of rpt. by Lars Jorgensen and T. H. Means. (*l*) Estimated on a basis of 3 ft. depth on land for alfalfa, 2.5 ft. for miscellaneous crops, and 2 ft. for trees and vines. (*m*) Considers additional conveyance losses balanced by return waters. (*n*) Irrigation season 165 days. (*o*) Of Berkeley. (*p*) Rpt. to Director, U. S. R. S. on Yuba River watershed. (*q*) Of Orland. (*r*) From rpt. to director, U. S. R. S. (*s*) From State Dept. of Pub. Wks., Div. of W. Rts., Appl. 1795. (*t*) Vice-Pres. (*u*) Of Nevada City. (*v*) From Rpt. of the Conservation Comm. of the State of California, 1912. (*w*) Alternative proposals depending on stored water in Aug. and Sept. (*x*) Water to be used; quantity not estimated. (*y*) These crops to be grown; area not estimated. (*z*) Depending on stored water in July, Aug. and Sept. (*aa*) Rpt. to Geo. S. Henry, Sacramento. (*bb*) Estimated on a basis of 1 miner's inch to 7 ac. with season of 6 months. (*cc*) Allows for heavy losses. (*dd*) From Irrigation Investigations. (*ee*) Assumes losses at 20 to 40 per cent.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use, in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P.ct.	P ct.	P.ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct.
14-Q	Diamond Ridge Water Co.																					
	Jones, Reddick and Holley. (a) (b)	45,000		1 50		1915																
	N. B. Ellery. (b) (c)	30,000	1 50	1 00	33 0	1919									x	x	x	x	x			
14-Q	H. Parker Farm. (g)																					
	J. E. Baricau (d)			1 00		1920									x	x	x	x	x			
14-S	Citrus Heights Irrigation Dist.																					
	S. C. Whipple. (f)	3,970		1 50		1920		0	0					x	x	x	20 0	x	x	x		
	J. W. Gross. (h) (i)	2,461		1 50		1921					0 7	0 8	1 0	5 0	16 0	17 0	19 0	17 0	13 0	9 0	0 8	0 7
14-S	North Fork Ditch Co. (j)																					
	S. E. Kieffer. (h)	36,600	1 75	1 66	k5 0	1920																
14-S	Carmichael Irrigation Dist. (h)																					
	A. Givan. (i)	3,113		1 50		1916					0 7	0 8	1 0	5 0	16 0	17 0	19 0	17 0	13 0	9 0	0 8	0.7
14-T	Fair Oaks Irrigation Dist.																					
	J. J. Jessup. (j) (l)	5,000		1 60		1918		86 5	13 5					mx	x	x	x	x	x	x		
	S. E. Kieffer. (h) (h)	5,000		2 00																		
14-U	Upper Miners Ravine. (n)																					
	M. J. Gillman (b) and Geo. S. Nickerson. (i)			1 10																		
14-U	Lower Miners Ravine. (n)																					
	S. E. Kieffer. (b)		1 75	1 66																		
14-U	Rock and Walker Creeks. (o)																					
	Noble and Davidson. (p)			0 61											x	x	x					
14-V	Michigan Bar Area. (q)																					
	E. R. Walker		2 00																			
15-A	Round Valley Indian Reservation.																					
	L. M. Holt. (r)		2 40	1 75	27 0	1917					s											

REMARKS (a) From rpt. to O. Scribner on irrigation from Slate Creek. (b) Of San Francisco. (c) From rpt. on company to Frank Adams, Feb. 22, 1919. (d) Of Auburn. (f) From rpt. to State Engr. (g) Major crops. (h) From rpt. to dist. (i) Of Sacramento. (j) From consulting engrs. rpt. to dist. (k) Assuming concrete lined canals. (l) Of Berkeley. (m) Irrigation season 200 days. (n) From rpt. on North Fork Ditch Co. (o) From rpt. on municipal water supply project for City of San Francisco. (p) Of Berkeley. (q) Irrigates south and east of Cosumnes River below Michigan Bar. (r) Supervising Engr., U. S. Indian Service, Yakima, Wash. (s) Irrigation season 108 days. (x) Water to be used; quantity not estimated. (q) From State Dept. of Pub. Wks., Div. of Eng. and Irrig. files.

TABLE 9—(Continued). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use. in per cent of annual supply.											
			Gross.	Net.			Alfalfa.	Trees Vines	Grain.	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
		Acres.	Feet.	Feet.	P.ct.		P.ct.	P ct	P.ct.	P.ct.	P ct	P ct	P.ct.	P ct	P ct	P.ct	P.ct.	P ct.	P.ct	P.ct.	P et.	P ct.
16-A	Klamath Project, U. S. R. S. 20th An. Rpt. U. S. R. S.	140,880	.....	1 80	.	1921	...	.....	.....	.....	.....	.....	.....	*ax*	*x*	*x*	*x*	*x*	*x*	.....	.....	.....
16-A	Klamath River Lands. *(b)* E. C. La Rue. *(c)*.	200,000	3 00	....	.	1922	...	.....	...	..	....	.....	....	0 6	18 3	29 5	24.7	21 1	5.8	.....	.....	.....
16-C	Grenada Irrigation Dist. F. H. Tibbetts. *(d)* *(e)*.....	4,064	.....	2.00		1921	...	...	...	...	...	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-C	Lands in Shasta Valley. *(b)* E. C. La Rue. *(c)*.....	100,000	2 50	.....		1922	..	.....	..	.....	.....	.....	.....	0.6	18.3	29.5	24 7	21 1	5.8	.....	.....	.....
16-E	North Central Mountain Valleys. *(f)* Frank Adams. *(g)*.....	250,000	1.50	.....	.....	1912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-F	Shasta County Valleys Tributary to Pit River. *(h)* E. G. Hopson *(j)* and O. W. Peterson *(e)*	111,000	.....	2.50	...	1915	*x*	.....	.....	*x*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-G	Big Valley Area. A. Babcock. *(l)*.....	200	.....	2 67	.....	1921	100 0	.....	.....	.....	.....	.....	.....	.....	.....	25 0	25.0	25.0	25.0	.....	.....	.....
16-H	Modoc and Lassen County Valleys tributary to Pit River. *(h)* E. G. Hopson *(j)* and O. W. Peterson *(e)*	66,000	.....	2.00	.....	1915	*x*	.....	.....	*x*	.....	.....	.....	.....	*m*	.....	.....	.....	.....	.....	.....	.....
16-K	Crooks Canyon Irrigation Dist. *(k)* H. H. Blee	6,080	1.00	.....	.....	1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-M	Surprise Valley Irrigation Dist. *(d)* W. L. Wales. *(n)* *(o)*.....	17,500	2 00	1.50	25.0	1917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-O	Secret Valley Irrigation Dist. *(d)* W. L. Wales. *(n)*.....	8,000	....	1 25	.....	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-Q	Tule Irrigation District. *(p)* E. L. Cope. *(q)*.....	60,000	2.00	.....	.....	1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16-Q	Honey Lake Valley Irrigation Dist. *(d)* W. L. Wales. *(n)*.....	33,150	2.20	1.83	16 8	1916	.....	.....	.....	.....	.....	.....	.....	*y*	*y*	*y*	*y*	*y*	*y*	.....	.....	.....

REMARKS—*(a)* Apr. 15 to Sept. 30, 168 days. *(b)* From Klamath River and its Utilization, 1922, Water Resources Branch, U. S. G. S. *(c)* Of Pasadena. *(d)* From rpt.to dist. *(e)* Of San Francisco. *(f)* From Rpt. of Conservation Comm., State of California, 1912. *(g)* Of Berkeley. *(h)* From U. S. R. S. rpt. on Pit River Basin. *(i)* Irrigation season 120 days. *(j)* Of Portland. *(k)* From rpt. to State Engr. by Hydrographer Blee. *(l)* Of Bieber, Calif. *(m)* Irrigation season 90 days. *(n)* Of Woodland. *(o)* Wale's estimate in 1918 gives irrigable area as 21,400 ac. *(p)* Estimate. *(q)* Of Cope, Rand and Means, San Francisco. *(x)* These crops to be growo; areas not estimated. *(y)* Water to be used; quantity not estimated.

TABLE 9—(Concluded). USE OF WATER AS PROPOSED FOR VARIOUS LOCALITIES.

Section and key letter.	Locality. Duty proposed by:	Area.	Annual use in depth on land.		Estimated loss of diverted water in conveyance.	Year of proposal.	Estimated area of future crops in per cent of total.				Proposed monthly use, in per cent of annual supply.											
			Gross	Net.			Alfalfa.	Trees Vines	Grain	Misc.	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		Acres.	Feet.	Feet.	P ct		P ct.	P ct.	P ct.	P ct.	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct	P ct
16-Q	Honey Lake Valley.																					
	U. S. R. S. (*a*)			2.00																		
	Frank Adams. (*b*) (*c*)	117,500		*d*1.50		1912																
	Frank Adams. (*b*) (*c*)	117,500		*e*2.00		1912																
16-R	Long Valley Creek Irrigation Dist. (*f*)																					
	E. C. Eaton (*g*)		2.00	1.50	25.0	1922																
16-R	Southern Lassen Irrigation Dist. (*h*)																					
	W. L. Wales (*i*)	22,565	2.50	2.00	20.0	1917								*y*	*y*	*y*	*y*	*y*	*y*			

REMARKS——(*a*) From rpt. by U. S. R. S., Aug. 9, 1915. (*b*) From Rpt. of Conservation Comm. of the State of California, 1912. (*c*) Of Berkeley. (*d*) Without storage. (*e*) With storage. (*f*) Rpt. to State Engr. (*g*) Of Sacramento. (*h*) From rpt. to dist. (*i*) Of Woodland. (*y*) Water to be used; quantities not estimated.

TABLE 10. SUMMARY OF USE AND DUTY OF WATER

by the sixteen sections of the State.*
Includes average measured and proposed use, annual and monthly†; also the annual duty and desirable monthly use.
Summarizes Tables 1, 2, 8 and 9.

Gross annual use and duty.			Net annual use and duty.			Section	Use and duty.	Monthly use. Average monthly use in per cent of the annual use.												
Items in record.a	Aggregate area. b	Average depth on land	Items in record a	Aggregate area. b	Average depth on land			Items in record.a	Aggregate area. b	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number	Acres	Feet	Number	Acres	Feet	Number		Number	Acres	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
38	191,223	2.40	216	516,325	1.62	1	Measured use.	133	535,627	3 6	2.9	3 5	8 2	12 4	13.3	13.6	12.3	11 1	9 0	5 8	4 3
2	.....	2.00	13	.....	1.95		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1 75		Duty. | Desirable use.	.....	.....	3 0	3 0	3 0	7 0	12 0	14 0	15 0	14.0	12 0	9 0	5 0	3 0
14	32,886	1.43	63	321,667	1.26	2	Measured use.	36	136,645	2.5	2 5	3.1	7 5	12.6	14 1	13.9	14.2	12 3	8 9	5.5	2.9
.....	.....	.....	12	.....	1 25		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1.25		Duty. | Desirable use.	.....	.....	2.0	2 0	3 0	7 0	13 0	14 0	15.0	14 0	13.0	10.0	5 0	2.0
94	7,251,459	4 07	51	2,587,575	2.91	3	Measured use.	56	2,542,551	4 2	4 7	8.7	10 6	10 2	11 5	12.1	11.3	9.8	7.5	5 1	4.3
.....	.....	.....	3	.....	2.58		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	3.00		Duty. | Desirable use.	.....	.....	3.0	5 0	7 0	8 0	10 0	12 0	13.0	13.0	12 0	9 0	5 0	3.0
.....	.....	.....	7	6,505	1.39	4	Measured use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	.....	1 29	6	.....	1 35		Proposed use.	1	.....	.....	.....	10.0	14 0	16.7	18 0	18.0	16.0	7.3	.....	.....	.....
.....	.....	.....	.....	.....	2 00		Duty. | Desirable use.	.....	.....	.....	.....	3 0	10 0	16 0	18 0	20 0	18 0	10 0	5 0	.....	.....

REMARKS: * See page 26 and map, Plate V.
† Average measured use is computed, weighting each use by the area it represents.
(a) An item in the records consists of: for measured use, the data for one year; for proposed use, one proposal for future practice.
(b) Aggregate area is the summation of acreage for all years of record and for all systems listed in this section; includes any repetition of the same acreage for ensuing years.

TABLE 10—(Continued). SUMMARY OF USE AND DUTY OF WATER

*by the sixteen sections of the State.**

Includes average measured and proposed use, annual and monthly†; also the annual duty and desirable monthly use. Summarizes Tables 1, 2, 8 and 9.

Gross annual use and duty.			Net annual use and duty.			Section.	Use and duty.	Monthly use. Average monthly use in per cent of the annual use.												
Items in record.(a)	Aggregate area. (b)	Average depth on land	Items in record.(a)	Aggregate area. (b)	Average depth on land			Items in record.(a)	Aggregate area. (b)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number	Acres	Feet	Number	Acres	Feet	Number		Number	Acres	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
23	477,591	6 58	11	424,597	3 31	5	Measured use.	7	213,215			2 0	13 0	19 6	19 0	19 7	14 1	9 8	2 5	0 3	
3		3 82	3		2 67		Proposed use.	1					10 0	14 0	21 0	21 0	18 0	16 0			
					2 50		Duty Desirable use.					2 0	10 0	16 0	20 0	20 0	18 0	10 0	4 0		
22	124,317	1 36	12	47,196	1 55	6	Measured use.	21	118,088	0 2	0 5	1 1	9 1	18 9	20 4	17 5	11 0	11 2	5 7	1 0	0 1
4		1 68	7		1 61		Proposed use.														
					1 75		Duty Desirable use				1 0	3 0	10 0	16 0	18 0	18 0	16 0	11 0	6 0	1 0	
290	10,314,890	2 66	120	2,751,012	2 21	7	Measured use.	265	9,303,581	1 6	2 5	7 1	10 1	23 7	22 1	13 5	5 6	2 5	2 2	1 5	1 3
14		2 59	16		2 17		Proposed use	21		0 3	1 2	5 7	11 7	16 1	18 7	16 7	12 9	10 5	3 6	2 1	0 2
					2 00		Duty Desirable use				2 0	5 0	11 0	17 0	18 0	18 0	15 0	10 0	4 0		
1		2 50	1	3,325	1 11	8	Measured use	3	1,325	1 3	5 5	7 1	7 0	7 7	10 0	12 5	11 0	7 7	8 0	13 0	5 6
							Proposed use.														
					1 75		Duty. Desirable use				2 0	5 0	11 0	17 0	18 0	18 0	15 0	10 0	4 0		

REMARKS: * See page 26 and map, Plate V.
† Average measured use is computed, weighting each use by the area it represents.
(a) An item in the records consists of, for measured use, the data for one year; for proposed use, one proposal for future practice.
(b) Aggregate area is the summation of acreage for all years of record and for all systems listed in this section; includes any repetition of the same acreage for ensuing years.

TABLE 10—(Continued.) SUMMARY OF USE AND DUTY OF WATER

*by the sixteen sections of the State.**

Includes average measured and proposed use, annual and monthly †; also the annual duty and desirable monthly use. Summarizes Tables 1, 2, 8 and 9.

Gross annual use and duty.			Net annual use and duty.			Section.	Use and duty.	Monthly use. Average monthly use in per cent of the annual use.												
Items in record *a*	Aggregate area. *b*	Average depth on land	Items in record *a*	Aggregate area. *b*	Average depth on land			Items in record *a*	Aggregate area. *b*	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
Number	Acres	Feet	Number	Acres	Feet	Number		Number	Acres	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
4	8,153	2.96	5	8,453	2 43	9	Measured use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	1 32		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	..	.....	1.50		Duty. | Desirable use.	..	.....	2 0	2 0	2 0	5 0	12 0	16.0	20 0	16 0	13.0	8.0	2.0	2.0
.....	.....	.....	5	5,788	1 82	10	Measured use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	.....	2 00	.....	.....	.....		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1 75		Duty. | Desirable use.	...	.....	.....	.....	2 0	12 0	18 0	20 0	20.0	16 0	10 0	2.0	....	...
7	6,692	2.08	9	14,398	1.42	11	Measured use.	3	19,860	1.4	1.7	1.8	2.3	7.7	17.0	18.9	16.3	14.0	8.5	5.9	4.5
.....	.....	.....	1	.....	1.42		Proposed use.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1.50		Duty. | Desirable use.	.....	.....	.....	.....	4 0	6.0	15.0	20.0	15.0	15 0	14 0	9 0	2.0	....
.....	.....	.....	1	470,000	1.14	12	Measured use.	1	470,000	.....	.....	1 6	1.8	6.0	22.3	25.1	21.9	14.9	4.5	1.9	.....
1	.....	1.69	2	.....	1.76		Proposed use.	1	.....	.....	.....	.....	8.6	15.0	20.6	21.5	21 0	10 5	2 8	.....	.....
.....	.....	.....	.....	.....	1.50		Duty. | Desirable use.	.....	.....	.....	.....	.....	.....	8.0	22.0	30.0	25.0	15 0	.....	...	....

TABLE 10.

REMARKS: * See page 26 and map, Plate V.
† Average measured use is computed, weighting each use by the area it represents.
(*a*) An item in the records consists of: for measured use, the data for one year; for proposed use, one proposal for future practice.
(*b*) Aggregate area is the summation of acreage for all years of record and for all systems listed in this section; includes any repetition of the same acreage for ensuing years.

TABLE 10—(Concluded). SUMMARY OF USE AND DUTY OF WATER

*by the sixteen sections of the State.**

Includes average measured and proposed use, annual and monthly †; also the annual duty and desirable monthly use. Summarizes Tables 1, 2, 8 and 9.

Gross annual use and duty.			Net annual use and duty.			Section.	Use and duty.	Monthly use. Average monthly use in per cent of the annual use.													
Items in record *a*	Aggregate area. *b*	Average depth on land	Items in record *a*	Aggregate area. *b*	Average depth on land			Items in record *a*	Aggregate area. *b*	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number	Acres	Feet	Number	Acres	Feet	Number		Number	Acres	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.	P.ct.
106	1,410,399	6 32	83	637,538	3 88	13	Measured use.	75	1,062,525	.	0 2	1 0	4 9	15 4	19 1	21 3	19 2	14 0	4 1	0 2	
22	.	1 10	23	.....	2 99		Proposed use.	11	. . .	...	.	0 6	9 1	15.2	18 6	20 8	19 7	13 9	1.9	0 2	..
					2 25		Duty. Desirable use.					1 0	5 0	16 0	20 0	22 0	20 0	12 0	4 0		
10	15,234	3 65	42	187,217	1 47	14	Measured use.	21	37,583	0 2	0 2	2 4	1 4	12 6	18 1	22 1	21 1	14 4	5 9	1 0	0 5
18		2 32	36	.	1 66		Proposed use.	9	.	0 1	0 2	1 7	6 1	16 0	19 1	21 1	19 8	12 1	2 9	0 2	0 1
					1 50		Duty. † Desirable use					2 0	2 0	15 0	20 0	22 0	20 0	13 0	5 0	1 0	
3	1,511	2 02	3	1,511	1 52	15	Measured use.														
1	.	2 40	1		1 75		Proposed use.														
					1 25		Duty. Desirable use						10 0	20 0	20 0	20 0	17 0	11 0	2 0		
24	403,712	2 34	26	137,206	1 30	16	Measured use.	26	308,157				0 9	19 2	31 0	24 1	20 7	4 1	..	. . .	
9		2 08	13		1 89		Proposed use.	3					0 4	12 2	28 0	24 8	22 4	12 2		..	
					1 75		Duty. † Desirable use						3 0	11 0	24 0	26 0	21 0	12 0			

REMARKS: * See page 26 and map, Plate V.
† Average measured use is computed, weighting each use by the area it represents.
(*a*) An item in the records consists of: for measured use, the data for one year; for proposed use, one proposal for future practice.
(*b*) Aggregate area is the summation of acreage for all years of record and for all systems listed in this section; includes any repetition of the same acreage for ensuing years.

TABLE 11. ILLUSTRATIVE CLIMATOLOGICAL DATA FOR AGRICULTURAL LANDS

by the sixteen sections of the State*.

Data from U. S. Weather Bureau records for selected stations within the agricultural areas of each section.*

TEMPERATURE: Monthly and annual means. Frost free period.

U. S. Weather Bureau Stations.	Section No.	Ja. Deg.	Fe. Deg.	Mr. Deg.	Ap. Deg.	Ma. Deg.	Ju. Deg.	Jy. Deg.	Au. Deg.	Se. Deg.	Oc. Deg.	Nv. Deg.	De. Deg.	Annual Degrees	Frost free Av. *a* Days	Frost free Ab. *b* Days
Ventura	1	52.8	53.2	53.6	56.0	58.6	62.1	63.5	64.6	61.4	60.1	57.2	54.9	58.2		
San Fernando	1	50.7	53.6	57.0	60.1	65.4	69.4	73.1	76.2	73.3	64.4	58.7	56.1	63.2		
Santa Monica	1	52.8	53.1	55.4	57.8	60.0	63.2	62.9	66.4	64.8	62.0	58.3	54.6	59.3	353	262
Norwalk	1	56.2	58.5	61.3	72.5	69.4	75.1	79.0	75.5	73.9	66.3	61.4	54.7	66.9		.
Azusa	1	51.8	52.6	56.8	60.3	62.6	69.1	73.9	74.1	71.2	65.0	57.7	53.3	62.4	282	207
Pomona	1	49.0	51.9	55.4	59.0	60.7	68.9	73.2	73.3	70.0	63.4	55.8	49.4	60.8	239	176
San Bernardino	1	51.5	53.4	55.9	59.8	63.4	70.1	75.6	75.7	71.4	64.4	57.5	52.0	62.6	259	188
Riverside	1	51.6	53.3	56.4	60.4	64.1	70.0	75.5	75.5	71.6	64.4	58.3	52.8	62.8	275	206
Santa Ana	1	55.5	57.5	60.2	64.2	68.8	72.2	75.0	75.4	73.3	68.4	61.8	57.5	65.8	290	219
San Diego	2	54.3	55.0	56.9	59.2	61.3	64.8	68.1	69.7	67.9	63.9	59.5	55.7	61.3	365	340
Escondido	2	50.0	52.1	55.1	58.5	62.5	68.4	72.5	72.4	68.9	62.3	56.1	50.4	60.8	254	149
Fallbrook	2	50.1	51.5	53.8	57.3	61.1	65.8	69.7	70.3	67.5	60.9	55.8	52.9	59.7	288	248
Elsinore	2	50.0	52.4	55.3	60.2	64.7	72.1	78.1	77.4	73.2	65.2	56.9	51.5	63.0	245	165
San Jacinto	2	48.8	52.2	54.9	59.5	63.8	71.4	76.8	76.4	71.6	64.2	56.8	50.3	62.2	256	193
Beaumont	2	46.3	49.8	49.6	61.1	61.5	71.2	78.1	77.7	72.6	63.2	56.2	50.5	61.5		...
Cuyamaca	2	38.1	38.5	41.9	46.7	51.2	62.1	65.2	67.5	61.8	52.7	45.0	38.8	50.8	168	56
Campo	2	....	...	...	...	...	....	.	...	...	...	.	.	.	177	87
Palm Springs	3	55.0	57.3	64.2	71.3	77.1	86.9	93.6	91.0	84.6	74.9	64.0	54.5	72.8		
Indio	3	53.4	58.7	65.0	72.4	79.0	88.0	93.6	92.4	85.9	75.2	62.8	55.5	73.4	295	241
Brawley	3	52.8	55.8	62.2	69.1	73.4	84.2	89.6	89.2	83.0	71.2	60.8	52.0	70.3	291	270
Imperial	3	53.7	59.6	62.6	69.6	73.9	82.5	92.2	90.2	83.2	73.8	60.7	53.4	71.4	294	226
Calexico	3	53.4	58.0	63.4	69.8	74.6	84.2	89.6	89.2	83.4	72.4	61.4	52.8	71.0	309	233
Blythe	3	49.6	54.3	60.4	67.6	73.2	83.0	88.8	88.2	81.6	68.1	57.6	45.7	68.2	253	199
Needles	3	52.0	57.2	63.6	71.2	78.6	87.6	93.8	91.9	83.6	70.8	59.4	51.5	71.7	299	226
Monterio	4	44.2	44.5	48.4	51.5	55.3	67.2	78.5	77.0	70.2	60.1	53.6	46.5	58.1	229	156
Mojave	4	46.0	49.0	52.2	59.5	68.0	77.4	85.5	83.7	76.3	65.7	54.6	47.2	63.8	264	182
Lancaster	4	...	...		...	...		...							...	
Llano	4	...							...					.		
Barstow *c*	4	46.3	50.4	56.4	61.8	67.4	77.8	83.6	82.4	74.2	64.0	54.2	45.9	63.7	248	199

PRECIPITATION: Monthly and annual means.

U. S. Weather Bureau Stations.	Elevation Feet	Ja. Ins.	Fe. Ins.	Mr. Ins.	Ap. Ins.	Ma. Ins.	Ju. Ins.	Jy. Ins.	Au. Ins.	Se. Ins.	Oc. Ins.	Nv. Ins.	De. Ins.	Annual Inches
Ventura	50	1.03	3.36	2.86	0.73	0.34	0.07	0.01	0.01	0.25	0.71	1.28	2.37	16.02
San Fernando	1,066	2.11	3.16	3.01	1.75	0.36	0.17	0.02	0.00	0.03	0.80	1.54	3.48	16.43
Santa Monica	110	3.54	3.04	2.81	0.54	0.32	0.02	0.00	0.03	0.14	0.64	1.45	2.18	14.71
Norwalk	95	2.78	1.74	1.55	0.06	0.50	0.17	0.00	0.00	0.00	1.11	0.45	0.72	9.08
Azusa	540	4.72	3.87	3.94	1.02	0.73	0.14	0.00	0.05	0.38	0.87	1.41	2.10	19.23
Pomona	857	5.80	5.58	2.24	0.78	0.46	0.08	0.00	0.01	0.42	0.64	1.23	2.27	19.51
San Bernardino	1,654	3.57	3.02	2.80	1.20	0.57	0.10	0.04	0.16	0.22	0.62	1.30	2.44	16.04
Riverside	851	2.32	2.01	2.18	0.70	0.36	0.04	0.02	0.17	0.18	0.50	0.72	1.54	10.74
Santa Ana	133	2.15	2.44	2.51	0.26	0.33	0.00	0.00	0.07	0.23	0.65	0.62	2.56	11.82
San Diego	87	1.93	1.93	1.49	0.61	0.31	0.06	0.06	0.10	0.08	0.37	0.94	1.75	9.63
Escondido	650	4.46	2.92	2.93	1.08	0.61	0.07	0.04	0.09	0.10	0.52	1.29	1.70	15.81
Fallbrook	700	3.38	3.38	2.99	1.33	0.62	0.11	0.03	0.04	0.10	0.71	1.46	2.88	17.03
Elsinore	1,234	3.53	2.38	2.63	0.54	0.31	0.03	0.11	0.16	0.17	0.52	1.06	1.78	13.42
San Jacinto	1,550	2.97	2.28	2.71	1.12	0.42	0.03	0.13	0.21	0.17	0.66	1.07	1.42	13.19
Beaumont	2,558	3.62	3.95	3.65	1.29	0.91	0.09	0.07	0.33	0.30	0.72	1.08	3.31	19.32
Cuyamaca	4,677	7.71	7.45	7.50	2.41	1.97	0.24	0.44	0.75	0.53	1.73	3.13	4.86	38.78
Campo	2,543	3.70	4.28	3.27	1.51	0.78	0.10	0.56	1.05	0.28	0.52	1.54	2.21	19.80
Palm Springs	584	0.82	1.09	0.56	0.04	0.06	0.00	0.05	0.20	0.08	0.25	0.27	0.89	4.31
Indio	-20	0.82	0.44	0.32	0.07	0.02	0.01	0.04	0.16	0.22	0.14	0.20	0.39	2.83
Brawley	-105	0.55	0.20	0.35	0.04	0.04	0.02	0.14	0.27	0.03	0.10	0.18	0.26	2.18
Imperial	-65	0.39	1.38	0.29	0.08	0.02	0.00	0.18	0.47	0.06	0.00	0.29	0.75	3.91
Calexico	00	0.55	0.57	0.34	0.09	0.06	0.02	0.07	0.53	0.15	0.13	0.29	0.30	3.10
Blythe	268	0.63	0.31	0.37	0.10	0.01	0.13	0.45	0.35	0.64	0.26	0.45	0.47	4.17
Needles	477	0.66	0.48	0.49	0.16	0.09	0.05	0.40	0.78	0.30	0.14	0.40	0.54	4.49
Monterio	4,500	2.92	3.31	3.29	0.90	0.82	0.07	0.13	0.41	0.26	0.76	1.33	1.82	16.02
Mojave	2,751	0.92	0.94	0.86	0.21	0.04	0.03	0.09	0.08	0.08	0.21	0.34	0.98	4.78
Lancaster	3,000	0.82	0.62	1.14	0.02	0.00	0.26	1.12	0.02	0.42	0.00	0.00	0.00	1.42
Llano	3,150	1.95	1.10	1.01	0.05	0.72	0.00	0.00	0.02	0.45	0.06	0.25	1.93	7.54
Barstow *c*	2,105	0.79	0.56	0.62	0.16	0.09	0.14	0.22	0.14	0.22	0.40	0.25	0.53	4.12

REMARKS—* See page 26 and map, Plate V. (*a*) Av.—Average number of days free from killing frosts for all years of record. (*b*) Ab.—Absolute number of days between latest recorded spring frost and earliest recorded fall frost, for all years of record; these frosts not necessarily occurring in same year. (*c*) Stations with adequate record nearest this section.

TABLE 11—(Continued). ILLUSTRATIVE CLIMATOLOGICAL DATA FOR AGRICULTURAL LANDS

*by the sixteen sections of the State.**

*Data from U. S. Weather Bureau records for selected stations within the agricultural areas of each section.**

U. S. Weather Bureau Stations.	Section.	Elevation.	PRECIPITATION: Monthly and annual means.												
			Ja.	Fe.	Mr.	Ap.	Ma.	Jn.	Jy.	Au.	Se.	Oc.	Nv.	De.	Annual.
	No.	Feet	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Inches
Bridgeport	5	6,473	3.31	1.99	0.47	0.58	0.77	0.28	0.58	0.50	0.21	0.47	0.37	0.87	10.40
Bishop		4,456	2.21	0.98	1.06	0.28	0.22	0.14	0.08	0.15	0.24	0.32	0.39	0.77	6.84
Independence		3,957	1.42	0.77	0.58	0.17	0.24	0.06	0.16	0.15	0.15	0.28	0.18	1.16	5.32
Lone Pine		3,728	1.32	0.94	0.98	0.22	0.43	0.04	0.09	0.16	0.23	0.42	0.11	0.66	5.60
Valley Springs	6	673	4.83	3.07	4.69	1.77	1.24	0.26	0.04	0.01	0.01	0.18	1.22	2.52	3.79	23.89
Oakdale		156	2.73	2.14	2.80	1.21	0.70	0.16	0.00	0.01	0.01	0.16	0.72	1.61	2.09	14.33
Groveland		1,100	11.55	5.78	10.36	2.78	1.74	0.35	0.02	0.02	0.02	0.78	2.14	2.60	5.50	13.62
Merced Falls		351	5.14	1.75	3.45	0.99	0.50	0.12	0.00	0.00	0.00	0.20	0.65	0.93	1.52	14.95
Porterville		464	1.96	1.56	1.92	0.85	0.63	0.10	0.03	0.01	0.28	0.50	0.72	1.46	9.96
Stockton	7	23	3.02	2.27	2.30	1.08	0.66	0.12	0.00	0.01	0.22	0.68	1.50	2.71	14.57
Modesto		90	2.91	1.41	1.71	0.85	0.48	0.12	0.01	0.00	0.19	0.52	1.31	1.75	11.32
Merced		173	2.35	1.48	1.89	0.95	0.54	0.12	0.01	0.02	0.21	0.49	1.17	1.59	10.82
Mendota		177	1.20	0.50	0.66	0.27	0.39	0.07	0.02	0.00	0.17	0.64	1.01	0.95	5.88
Fresno		293	1.74	1.36	1.81	0.97	0.56	0.14	0.00	0.00	0.20	0.63	1.13	1.47	10.04
Hanford		249	2.06	1.49	2.10	0.70	0.56	0.05	0.00	0.03	0.16	0.27	0.75	0.70	8.54
Delano		319	0.97	1.13	1.05	0.68	0.52	0.08	0.01	0.00	0.22	0.34	0.59	0.80	6.39
Bakersfield		394	1.01	0.76	1.06	0.31	0.31	0.04	0.01	0.01	0.17	0.35	0.58	0.72	5.39
Coalinga	8	663	1.93	1.23	1.08	0.57	0.25	0.02	0.15	0.00	0.06	0.21	0.47	0.99	6.96
Maricopa *c*		640	1.12	1.38	1.13	0.57	0.34	0.06	0.02	0.01	0.25	0.26	0.30	0.96	6.43
Paso Robles	9	725	3.71	2.70	3.58	0.75	0.55	0.03	0.00	0.07	0.29	0.87	1.45	2.54	16.24
Parkfield		2,860	1.06	1.28	2.36	1.06	0.47	0.07	0.01	0.09	0.16	0.38	1.18	2.30	15.12
San Luis Obispo		261	4.78	4.20	2.96	2.01	0.37	0.15	0.00	0.00	0.03	0.67	1.31	1.27	20.75
Santa Maria		220	3.10	2.50	2.89	0.86	0.51	0.01	0.01	0.03	0.29	0.91	1.35	2.08	14.54
Lompoc		95	0.35	2.77	2.97	0.23	0.52	0.00	0.00	0.00	0.17	0.56	1.23	1.23	10.03
Wasoga		2,393	1.45	1.75	1.16	0.00	0.36	0.00	0.00	0.00	0.52	0.41	0.88	1.01	19.54
Santa Barbara		150	1.18	3.35	2.98	1.18	0.44	0.09	0.02	0.01	0.41	0.81	1.48	3.25	18.23

U. S. Weather Bureau Stations.	Section.	Elevation.	TEMPERATURE: Monthly and annual means.													Frost free period.	
			Ja.	Fe.	Mr.	Ap.	Ma.	Jn.	Jy.	Au.	Se.	Oc.	Nv.	De.	Annual	Av. *a*	Ab. *b*
	No.	Feet	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Degrees	Days	Days
Bridgeport	5	6,473	17 5	21 8	25 7	39 8	44 6	52.8	59 2	58 2	50 9	42 2	33 0	24 6	39 2	131	70
Bishop		4,456	37 0	41 6	46 2	52 9	59 0	66 9	72 8	71 4	63 9	55 0	45 6	38 0	54 1	152	106
Independence		3,957	40 0	44 7	48 4	55 9	61 9	72 0	77 7	76 6	68 3	57 8	47 6	38 9	57 2	205	123
Lone Pine		3,728	39 9	44 0	50 0	55 9	61 1	69 4	74 6	72 3	65 2	56 5	47 7	39 5	56 3	185	125
Valley Springs	6	673	46 2	50 9	54 3	60 2	65 8	74 5	81 0	78 3	72 0	63 2	56 2	47 7	62 5	249	197
Oakdale		156	45 7	48 7	52 7	59 3	64 9	73 9	79 7	76 3	71 4	62 5	52 9	44 9	61 1	265	211
Groveland		1,100	41 6	46 0	47 0	52 5	57 2	66 9	74 4	72 2	64 6	57 4	48 3	40 7	55 3	260	145
Merced Falls		351	48 0	51 8	56 2	62 9	70 3	78 8	84 8	82 6	75 1	64 9	54 9	47 8	64 8	306	212
Stockton	7	23	46 5	50 0	51 5	58 9	64 1	69 9	72 6	72 5	69 0	61 7	53 9	47 1	60 1	292	224
Modesto		90	46 6	50 1	55 9	62 2	69 4	76 6	81 5	79 7	74 7	65 3	55 8	48 1	63 8	297	259
Merced		173	47 0	51 0	55 0	60 0	67 3	75 3	81 7	79 3	73 7	64 8	55 1	48 3	63 2	249	201
Mendota		177	46 7	49 9	53 5	62 2	68 4	77 0	83 1	78 6	71 8	64 1	54 3	48 3	63 1		
Fresno	7	293	45 1	49 2	54 9	61 2	68 4	75 8	82 0	81 2	74 3	64 7	54 6	46 8	63 2	281	213
Hanford		249	44 1	49 2	53 6	59 2	69 5	76 9	78 5	77 5	70 9	62 8	53 3	43 9	61 6	240	152
Delano		319	47 1	51 7	56 8	62 6	70 8	79 7	85 7	85 5	78 6	66 1	55 8	48 9	65 8		
Bakersfield		394	48 1	52 1	57 9	64 7	72 9	81 9	88 6	84 7	75 8	66 0	55 9	48 2	66 4	273	206
Coalinga	8	663	46 0	50 8	53 5	58 5	64 5	74 1	81 5	79 7	72 7	61 3	53 8	47 1	62 0	212	171
Maricopa *c*		640	46 2	53 1	56 5	61 5	68 5	76 8	85 8	82 8	75 1	66 2	56 4	47 1	64 5	281	225
Paso Robles	9	725	44 6	47 8	51 6	57 9	64 9	68 1	72 5	71 1	66 9	59 8	51 6	45 6	58 3	198	126
Parkfield		2,860															
San Luis Obispo		261	51 0	52 5	53 8	55 2	56 7	60 1	63 2	62 5	61 5	59 2	56 3	52 8	57 2	275	153
Santa Maria		220	51 8	53 0	55 3	58 0	59 5	62 5	64 4	64 8	63 6	62 0	57 2	53 1	58 8	279	218
Lompoc		95															
Wasoga		2,393															
Santa Barbara		150	53 8	54 9	55 6	57 7	59 3	62 6	65 2	66 9	65 8	63 0	59 2	55 9	60 0	325	237

REMARKS. * See page 26 and map, Plate V. *(a)* Av. Average number of days free from killing frosts for all years of record. *(b)* Ab. Absolute number of days between latest recorded spring frost and earliest recorded fall frost, for all years of record; these frosts not necessarily occurring in same year. *(c)* Stations with adequate record nearest this station.

TABLE 11—(Continued). ILLUSTRATIVE CLIMATOLOGICAL DATA FOR AGRICULTURAL LANDS

*by the sixteen sections of the State.**

*Data from U. S. Weather Bureau records for selected stations within the agricultural areas of each section.**

TEMPERATURE: Monthly and annual means.														Frost free period.		U. S. Weather Bureau Stations.	Section.	Elevation.	PRECIPITATION: Monthly and annual means.												
Ja.	Fe.	Mr.	Ap.	Ma.	Ju.	Jy.	Au.	Se.	Oc.	Nv.	De.	Annual	Av. *a*	Ab. *b*				Ja.	Fe.	Mr.	Ap.	Ma.	Ju.	Jy.	Au.	Se.	Oc.	Nv.	De.	Annual.
Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Degrees	Days	Days			No.	Feet	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Inches
48.2	50.3	52 7	55 8	60.0	62.0	62 7	61 6	61 1	57 5	53.1	50 1	56.3	263	176	Salinas			40	2.95	2.31	2 41	1 17	0 51	0 13	0 00	0 00	0 02	0 20	0 70	1.38	2 36	11 14
48 3	49 9	51 5	55 6	56 8	60 1	60 6	60 4	60.1	58.5	53.6	48 6	55.3	299	255	Gonzales		10	127	3.02	1.86	2.73	0.72	0 40	0 01	0 00	0 00	0 15	0.59	1.35	1.55	12.38
48.4	48 8	53 5	56 2	59 6	63.7	67 0	66.4	66.0	59.3	53.8	49.0	57.6	227	120	Kings City			333	2.57	1 82	2.44	0 56	0 30	0 02	0 00	0 00	0 00	0 21	0 63	1 16	1 76	11.47
													212	140	Jolon			960	4 04	2 80	3.96	1 15	0 54	0 05	0 01	0 02	0 26	0 94	1 97	2.70	18 44
45 2	51.9	54.5	57 5	56 4	62 1	67 6	70 8	69.0	62 6	51 1	48 6	58.1	294	191	Walnut Creek			149	4 32	5 29	2 44	0 60	0 57	0 01	0.00	0 03	0.99	0 24	1 30	4 08	19 87
49.3	51 6	53 8	56 9	61 4	67 6	70 1	69 6	68 2	62.8	54 9	50 5	59 7	254	183	Livermore			485	3 18	2 33	2 59	1 10	0 59	0 15	0 01	0 03	0 31	0 75	1 59	2.90	15.53
51.7	54 4	56 7	59 9	62 9	67.2	68 9	69 0	68.3	62.3	56 8	52.4	60.9	292	202	Niles			87	3.09	3 07	2.94	1 40	0 74	0 19	0 00	0 03	0.29	1 01	2 08	3.38	18.82
48 3	50 6	53 7	56 7	60 7	65 0	66 9	66 7	64.7	60.3	54.4	49 9	58 2	281	196	San Jose		11	95	2 99	2 30	2 87	1 24	0 56	0 13	0 00	0 03	0 24	0 79	1.53	2 55	15 23
47 9	49 6	53 1	56 8	60 8	64 8	65 4	65 2	63.7	59.0	53 8	49.6	57.5	262	213	San Mateo			22	4 78	3.31	3 56	1 52	0 59	0.16	0 00	0 01	0 37	1 16	2 29	3 37	21 12
52 4	52 3	55 1	56 6	58 7	62 4	63 3	62 8	60.3	58.4	56.1	51.3	57 5	223	124	Watsonville			23	4.45	3 37	4 18	1 41	0 68	0 07	0 00	0 01	0 18	2 17	2 10	4 13	22 75
48 8	51.9	54 5	58 2	62 3	65 9	67 2	66 7	65.6	60.6	54 5	50.1	58 9	249	181	Hollister			284	2.71	1.99	2.38	1 05	0 54	0 13	0 01	0 04	0 11	0 70	1.49	1.97	13 12
47 2	51 5	55 8	59 9	63 8	68 3	71 1	70 7	69 8	63.0	54 8	48 6	60 4	286	225	Suisun			20	4.34	3.34	3.28	1 29	0 83	0.22	0 03	0 03	0 44	1 07	2 16	3.50	20 53
46 5	50 8	54 4	59 7	66 1	72 0	75 8	74 5	71.1	63.4	53 8	48.3	61.4	283	209	Antioch		12	46	2.70	1 93	2 30	0 78	0 50	0 12	0 00	0 02	0 25	0 66	1.30	2 38	12 94
45 6	50 8	54 3	58 0	63 6	70 4	74 5	72 6	69 3	62.4	53.7	45.4	60.0	258	205	Rio Vista			28	4.59	2 00	2.42	1 06	0 80	0 26	0 00	0 03	0 43	1.52	2 05	2 43	17 59
													246	190	Anderson			550	4 91	4.75	5 86	3.16	2 26	1 84	0 10	0.10	0 80	3.04	3 43	6.60	36 85
47 0	51.0	54 9	60 7	68 9	77 6	84 1	81 3	74.3	64.4	55.1	48 6	64.0	302	237	Tehama			220	4.45	3 05	2 87	1 23	0 82	0 29	0 06	0 03	0 46	1 08	2 24	3 53	20.11
47.6	51.2	55 7	63 4	70 4	78 7	86 4	84 2	76 7	66.4	56.4	47.9	65.4	270	217	Orland			254	3 91	2.89	2 67	1 16	0 87	0 34	0 03	0 01	0 47	0 96	2 08	3 02	18.41
46.9	50 3	55 6	61 6	68 4	77 1	83 9	81 5	74.6	64 4	53.8	47.5	63.8	245	190	Chico			189	5 20	3.73	3 20	1.62	1 01	0 43	0 01	0 02	0 56	1.22	2 56	4 17	23.76
45.2	48 8	54 6	60 3	68 5	76 9	82 9	81 6	75 6	65.2	54.8	47 2	63.5	270	198	Willows		13	136	3.85	2 52	2 32	1 12	0.75	0 21	0 01	0 03	0.36	0.83	1.90	3.00	16 90
46.0	49 7	53 1	58 8	65 0	71 4	77 1	74 5	69.0	61 6	52.6	45.2	60 4	267	185	Colusa			60	3.57	2 80	2 42	1 07	0 61	0 33	0 02	0 01	0 35	0 60	1.52	3 27	16 57
48.4	51.3	57.4	62 0	68 8	76 2	80 0	78 9	74 0	65.3	56.4	49.9	64.0	283	230	Marysville			67	4.19	3 07	2 81	1 40	0 89	0 25	0 00	0 01	0.34	1 09	2.17	3.58	19 80
47.6	51.6	56.2	60 8	67.9	74 8	77.9	74 1	72.0	64.9	55.7	48.8	62.7	235	167	Davis			51	4.13	2.75	2 57	1 17	0 72	0 17	0 02	0 01	0.26	0 74	1.59	3.44	17.57
46 4	51 0	53 9	58 8	64 2	71 0	75 5	74 5	70 8	64 3	55.4	47 4	61.1	268	179	Vacaville			175	5 31	3.32	3 94	2 79	1 56	0 19	0 00	0 00	0 24	1.63	3 26	7 40	29 64
47 3	50 3	55 2	61 2	67 1	74 6	79 0	77 4	72.0	63 0	54.0	48.7	62.5	315	254	Galt			49	3 47	2 40	2 87	1 71	1 06	0 11	0 00	0 01	0 26	1.07	1 95	3 23	18 14

REMARKS—* See page 26 and map, Plate V. (*a*) Av.—Average number of days free from killing frosts for all years of record. (*b*) Ab.—Absolute number of days between latest recorded spring frost and earliest recorded fall frost, for all years of record; these frosts not necessarily occurring in same year.

TABLE 11.—(Concluded). ILLUSTRATIVE CLIMATOLOGICAL DATA FOR AGRICULTURAL LANDS

*by the sixteen sections of the State.**

*Data from U. S. Weather Bureau records for selected stations within the agricultural areas of each section.**

TEMPERATURE: Monthly and annual means.														Frost free period.		U. S. Weather Bureau Stations.	Section.	Elevation.	PRECIPITATION: Monthly and annual means.												
Ja.	Fe.	Mr.	Ap.	Ma.	Jn	Jy.	Au	Se.	Oc.	Nv.	De.	Annual	Av. *a*	Ab. *b*				Ja	Fe.	Mr.	Ap.	Ma.	Jn.	Jy.	Au.	Se.	Oc.	Nv.	De.	Annual.
Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	Deg	Deg.	Deg.	Deg.	Days	Days		No.	Feet	Ins.	Ins	Ins	Ins.	Ins	Ins	Ins.	Ins	Ins	Ins	Ins.	Ins	Inches
47 1	49 7	52 9	58 9	67 9	77 0	82 5	80 6	72 3	64 2	56 1	47 8	63.4	235	215	Ferndale		621	4 90	3 51	3 37	1 21	0 21	0 26	0 00	0 00	0 05	0 11	1 09	1 90	3 38	21 33
45 2	49 3	53 8	60 2	67 2	75 0	82 3	81 0	74 0	64 5	54 1	47 0	62 8	260	169	Redding		552	8 25	5 75	5 24	2 86	2 19	0 83	0 11	0 06	0 76	2 47	4 04	6 48	38.77
46 8	50 6	54 3	59 5	66 1	74 5	80 2	78 6	73 0	65 4	55 9	47 8	62 7	281	195	Oroville		250	6 22	4 22	4 03	1 80	1 50	0 37	0 03	0 01	0 74	1 46	3 18	1 89	28 45
41 5	43 4	44 8	50 5	55 6	62 7	68 8	68 1	62 2	55 7	47 8	42 4	53 6	157	108	Nevada City	14	2,580	11 31	7 99	8 50	4 30	2 47	0 65	0 01	0 01	0 75	2 48	5 82	10.00	54 35
45 6	48 1	51 7	56 5	62 7	70 8	76 8	75 9	71 0	64 6	55 0	47 0	60 5	273	203	Auburn		1,360	7 01	5 35	5 28	2 77	1 44	0 42	0 01	0 01	0 52	1 77	3 65	5 63	33 84
47 1	50 8	54 8	60 8	66 5	74 1	79 9	77 7	71 8	63 6	54 6	47 0	62 4	279	211	Folsom		252	5 42	3 82	3 81	1 93	1 46	0 23	0 02	0 02	0 38	1 25	2 52	1 23	21 79
41 1	43 6	46 3	51 4	58 5	66 8	72 7	69 8	62 8	55 5	48 1	42 0	54 8	197	82	Placerville		1,820	8 08	5 75	7 48	4 91	2 45	0 68	0 02	0 02	0 62	2 54	5 21	7 83	15 59
41 9	44 8	46 8	53 3	57 3	65 4	72 9	70 2	64 7	57 1	49 6	43 0	55 6	200	169	Jackson		1,975	5 25	5 85	5 59	3 30	1 56	0 33	0 00	0 00	0 33	1 88	2 06	3 76	51 91
47 0	47.4	48 4	50 0	52 3	54 3	55 6	56 0	55.4	53 5	51 1	47 7	51 5	291	218	Eureka		64	8 19	8 01	5 99	3 43	2 25	0 91	0 16	0 19	1 00	2 37	5 57	6 42	44 19
															Covelo		1,550	7 80	4 79	4 06	1 52	1 25	0 49	0 18	0 05	0 51	1 61	4 18	7 32	36 85
45 0	47 6	49 7	54 7	59 2	65 1	71 3	70 7	65 6	60 0	50 6	45 1	57 1	226	142	Ukiah	15	620	8 62	6 10	5 16	2 34	1 28	0 31	0 02	0 02	0 55	1 66	4 10	6 60	36 70
44 0	47 0	49 2	54 8	59 5	66 7	73 9	73 1	66 9	59 4	50 8	44 4	57 6	222	150	Upper Lake		1,350	6 99	4 54	3 80	1 67	1 22	0 25	0 03	0 03	0 47	1 36	3 05	5 08	38 54
47 5	50 3	52 0	55 7	60 0	65 2	66 3	65 2	64 2	59 9	53 6	48 2	57 4	216	108	Santa Rosa		181	7 35	5 02	4 57	1 61	1 49	0 21	0 06	0 02	0 52	1 61	3 14	5 47	41 10
46 9	50 6	52 6	56 8	60 8	65 1	67 6	67 0	66 0	62 0	54 1	47 7	58 1	283	183	Napa		20	5 63	3 80	3 50	1 76	0 93	0 20	0 01	0 02	0 50	1 10	2 36	4 09	23 99
34 2	38 6	43 4	48 7	55 5	62 6	70 4	70 1	64 1	52 0	42 0	34 8	51 1	137	77	Yreka		2,645	4 33	3 46	1 84	1 00	1 13	0 57	0 38	0 25	0 39	1 05	2 45	2 94	17 76
27 8	30 1	36 4	41 9	47 8	53 6	62 9	61 7	51 3	35 5	26 5	27 5	43 8	51	3	Macdoel		4,258	2 25	1 51	1 23	0 76	1 14	0 74	0 76	0 42	0 47	1 30	2 53	2 43	15 07
30 7	34 4	42 2	46 5	54 1	57 7	64 0	61 6	55 4	47 3	39 6	31 4	46 9	89	50	Burney ..		3,500	8 13	5 70	5 40	2 02	1 94	1 23	0 28	0 08	0 74	1 43	3 65	4 58	28 39
29 0	33 4	39 0	46 3	51 5	58 6	67 1	65 3	56 6	48 6	38 9	31 0	47 1	72	11	Alturas	16	4,160	2 21	1 07	1 18	1 28	1 22	0 77	0 71	0 21	0 56	1 01	1 08	1 47	13 05
30 5	33 9	38 0	46 2	52 0	60 1	69 6	68 5	59 1	50 0	39 3	30 4	48 2	121	57	Cedarville		4,675	2 05	1 59	1 58	0 94	1 21	0 68	0 32	0 22	0 50	1 07	1 71	1 61	13 51
24 7	26 5	35 4	42 0	46 4	55 3	62 1	62 8	53 9	45 8	37 6	31 1	43 7	67	4	Madeline		5,270	1 28	1 73	1 32	0 91	1 10	0 94	0 80	0 18	0 40	0 60	1 18	2 25	16 07
31 1	34 4	39 6	47 3	55 0	63 9	71 8	70 7	61 6	50 6	41 8	32 4	50 1	130	72	Susanville		4,195	1 57	1 68	2 27	1 21	1 29	0 54	1 22	0 23	0 62	1 13	2 39	3 39	21 07
33 3	36 8	40 8	48 0	53 8	60 8	65 3	63 7	57 2	49 9	41 2	34 2	48 8	85	29	Quincy		3,400	10 35	6 00	6 92	2 14	2 32	0 73	0 10	0 13	1 25	2 63	5 10	6 05	44 01

REMARKS.—*See page 26 and map, Plate V. (*a*) Av.—Average number of days free from killing frosts for all years of record. (*b*) Ab. Absolute number of days between latest recorded spring frost and earliest recorded fall frost for all years of record; these frosts not necessarily occurring in same year.

INDEX.

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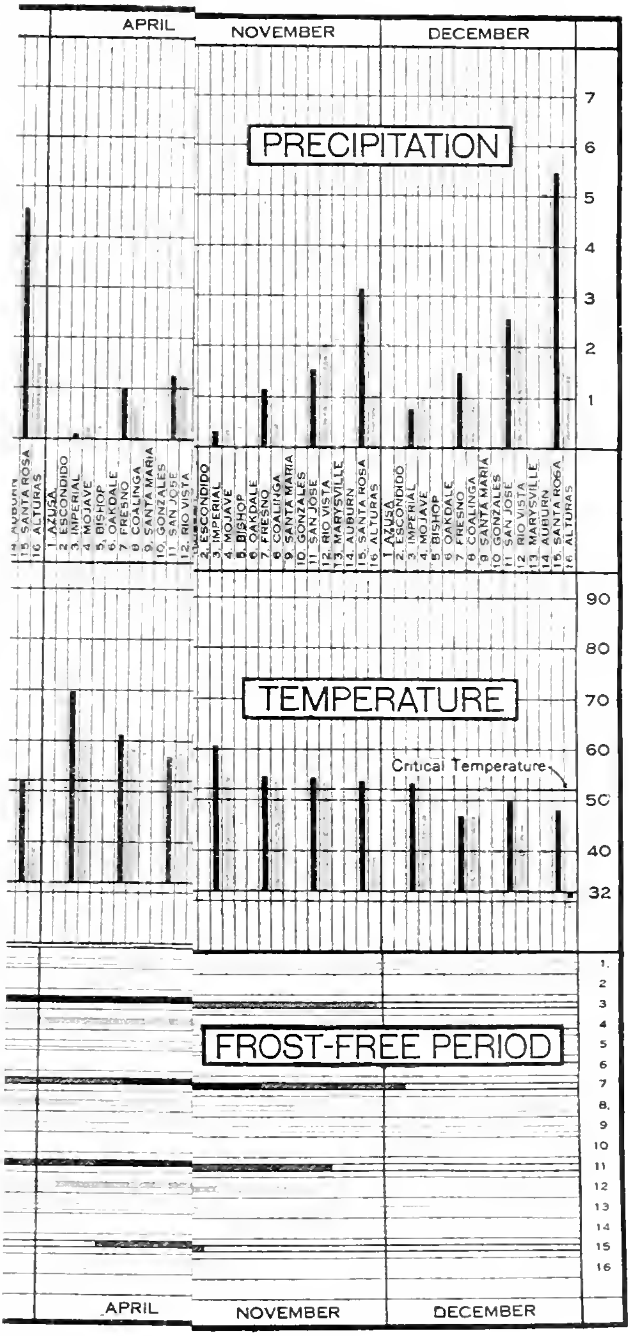

ILLUSTRATIVE CLIMATOLOGY OF AGRICULTURAL LANDS

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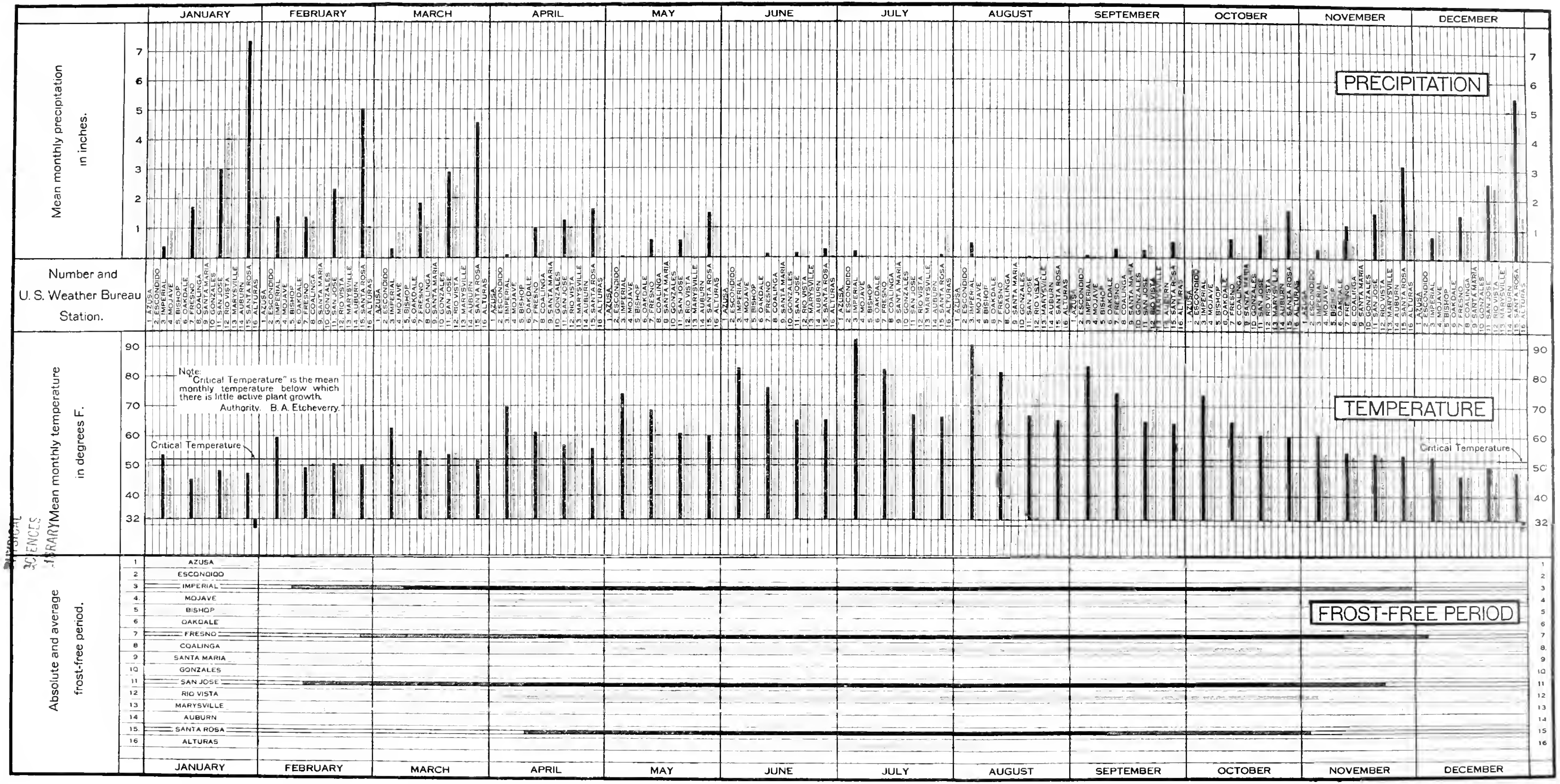
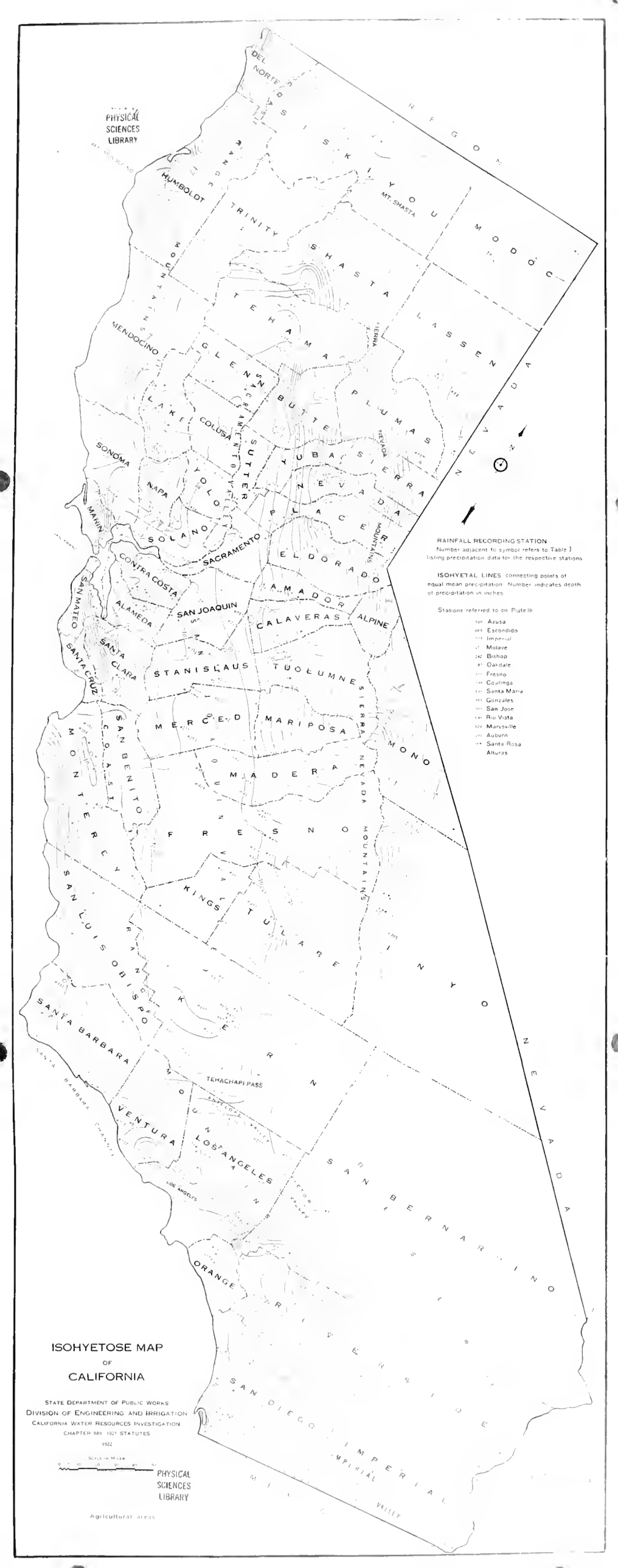
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER 889 1921 STATUTES



ILLUSTRATIVE CLIMATOLOGY OF AGRICULTURAL LANDS

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION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LAKE
COLUSA
SUTTER
YUBA
SIERRA
NEVADA
SONOMA
NAPA
YOLO
PLACER
MARIN
SOLANO
SACRAMENTO
EL DORADO
CONTRA COSTA
AMADOR
SAN MATEO
ALAMEDA
SAN JOAQUIN
CALAVERAS
ALPINE
SANTA CLARA
SANTA CRUZ
STANISLAUS
TUOLUMNE
MERCED
MARIPOSA
MONO
SAN BENITO
MONTEREY
MADERA
FRESNO
KINGS
TULARE
INYO
SAN LUIS OBISPO
SANTA BARBARA
TEHACHAPI PASS
VENTURA
LOS ANGELES
SAN BERNARDINO
ORANGE
RIVERSIDE
SAN DIEGO
IMPERIAL
RAINFALL RECORDING STATION
Number adjacent to symbol refers to Table 1 listing precipitation data for the respective stations
ISOHYETAL LINES connecting points of equal mean precipitation. Number indicates depth of precipitation in inches
Stations referred to on Plate III
Azusa
Escondido
Imperial
Mojave
Bishop
Oakdale
Fresno
Coalinga
Santa Maria
Gonzales
San Jose
Rio Vista
Marysville
Auburn
Santa Rosa
Alturas
ISOHYETOSE MAP
OF
CALIFORNIA
STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER 889, 1921 STATUTES
1922
Scale in Miles
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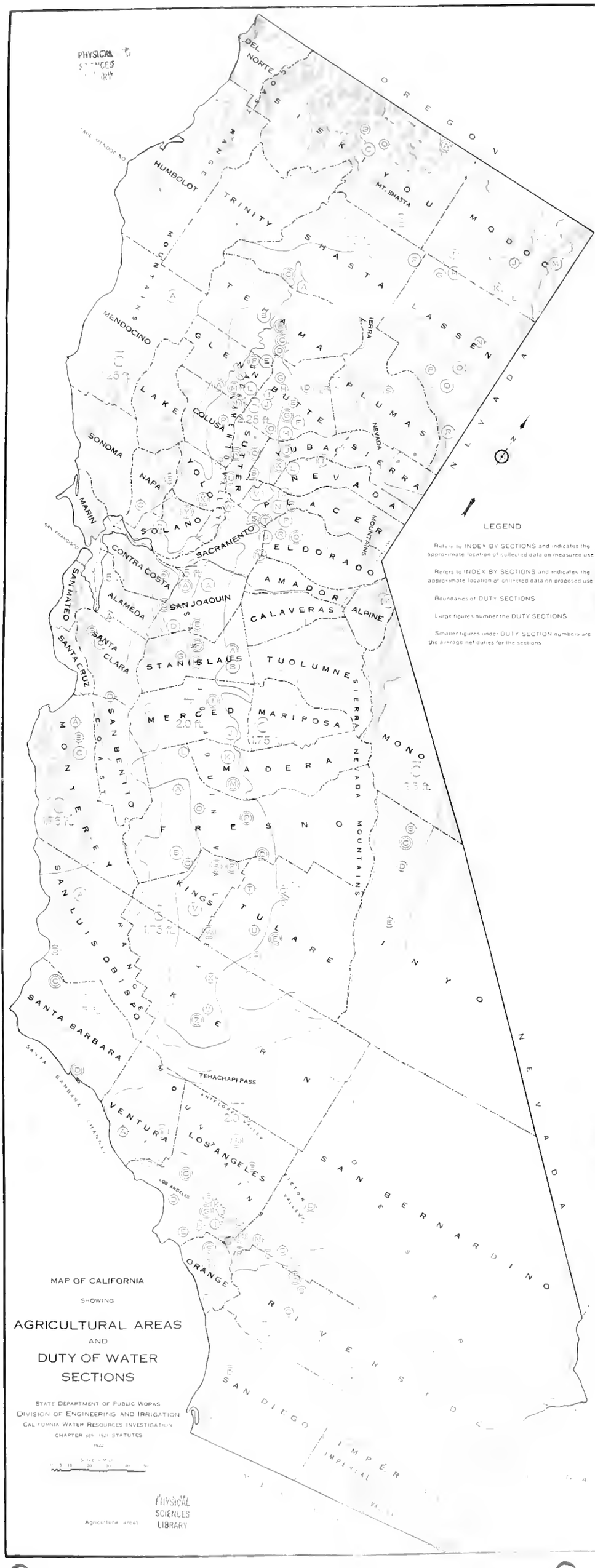
Agricultural areas



MAP OF CALIFORNIA

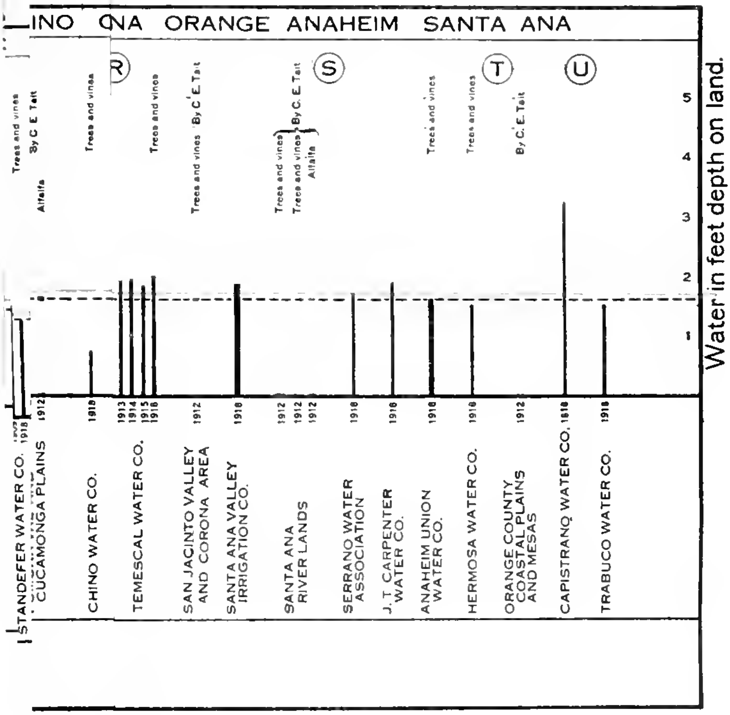
SHOWING

AGRICULTURAL AREAS AND DUTY OF WATER SECTIONS

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER 869, 1921 STATUTES
1922

Agricultural areas

Plate VI



ET USE OF WATER
EASURED AND PROPOSED
N VARIOUS SYSTEMS

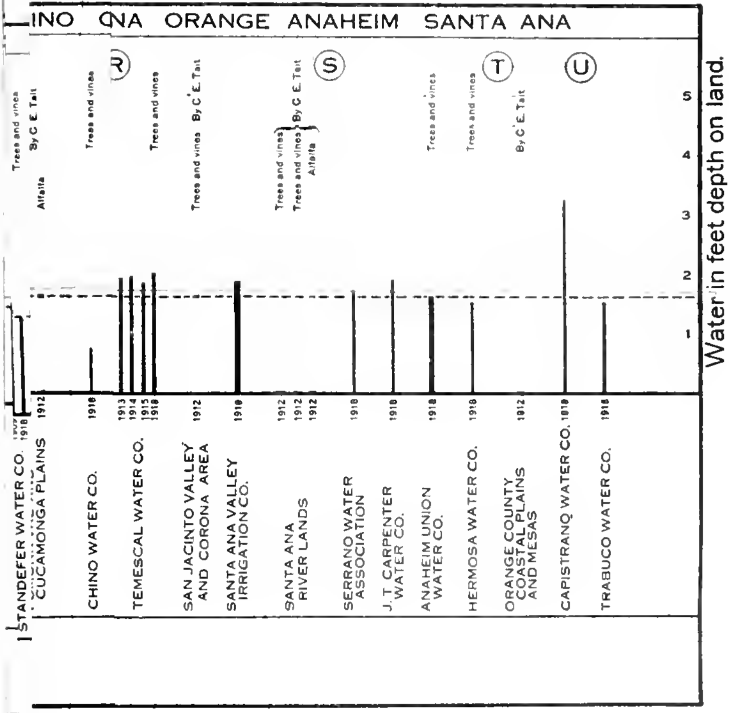
STATE DEPARTMENT OF PUBLIC WORKS

N OF ENGINEERING AND IRRIGATION

ALIFORNIA WATER RESOURCES INVESTIGATION

CHAPTER 889—1921 STATUTES

Plate VI



ET USE OF WATER

EASURED AND PROPOSED

N VARIOUS SYSTEMS

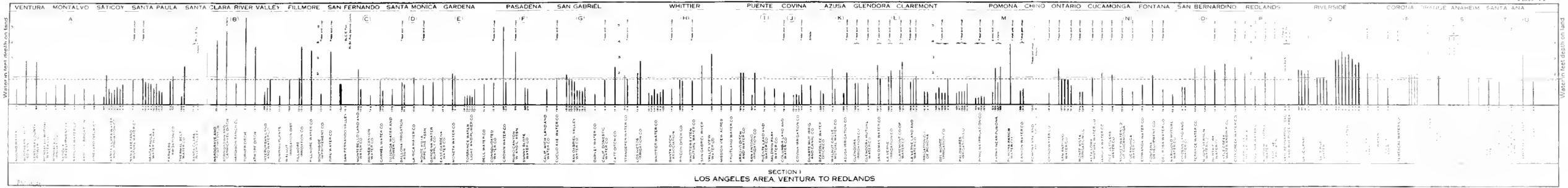
STATE DEPARTMENT OF PUBLIC WORKS

N OF ENGINEERING AND IRRIGATION

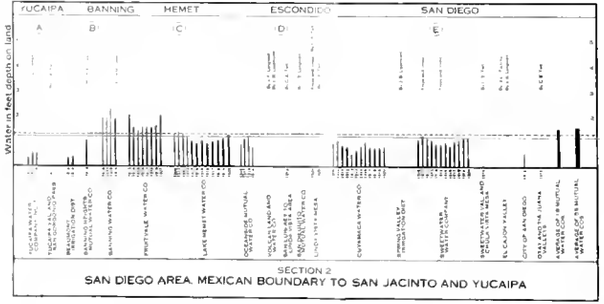
ALIFORNIA WATER RESOURCES INVESTIGATION

CHAPTER 889—1921 STATUTES

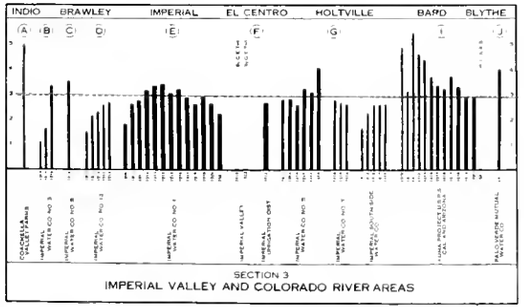
Plate VI



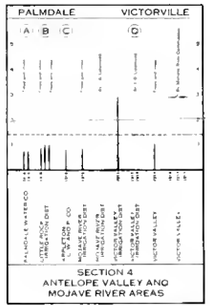
SECTION 1
LOS ANGELES AREA, VENTURA TO REDLANDS



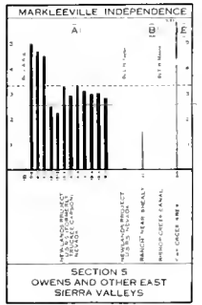
SECTION 2
SAN DIEGO AREA, MEXICAN BOUNDARY TO SAN JACINTO AND YUCAIPA



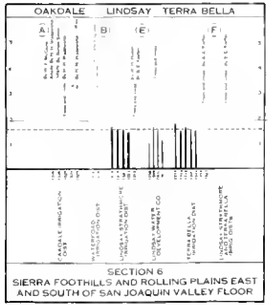
SECTION 3
IMPERIAL VALLEY AND COLORADO RIVER AREAS



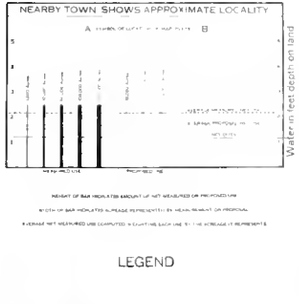
SECTION 4
ANTELOPE VALLEY AND MOJAVE RIVER AREAS



SECTION 5
OWENS AND OTHER EAST SIERRA VALLEYS



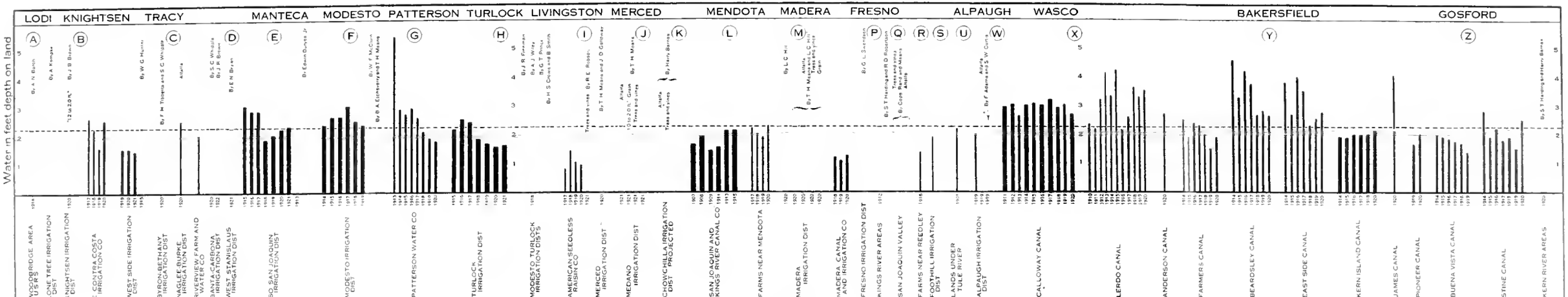
SECTION 6
SIERRA FOOTHILLS AND ROLLING PLAINS EAST AND SOUTH OF SAN JOAQUIN VALLEY FLOOR



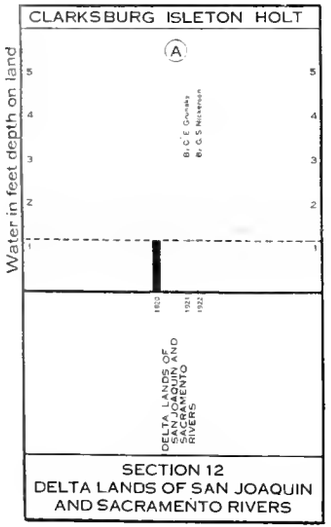
LEGEND

NET USE OF WATER
AS MEASURED AND PROPOSED ON VARIOUS SYSTEMS

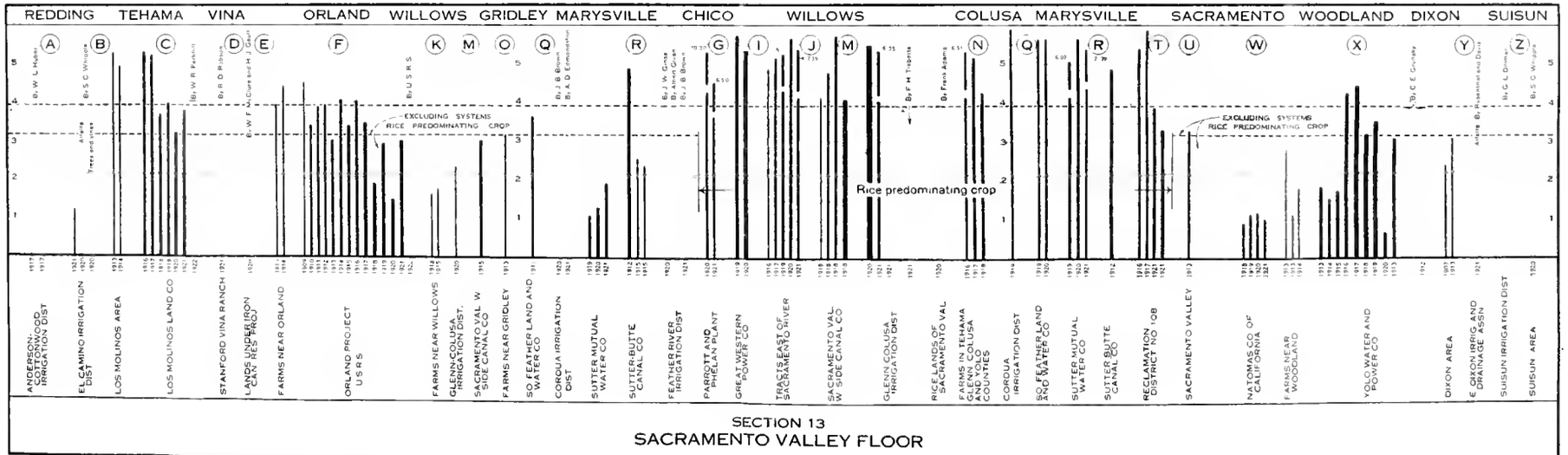
STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION



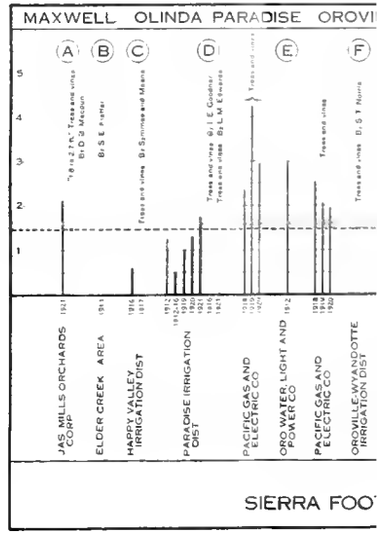
SECTION 7
SAN JOAQUIN VALLEY FLOOR



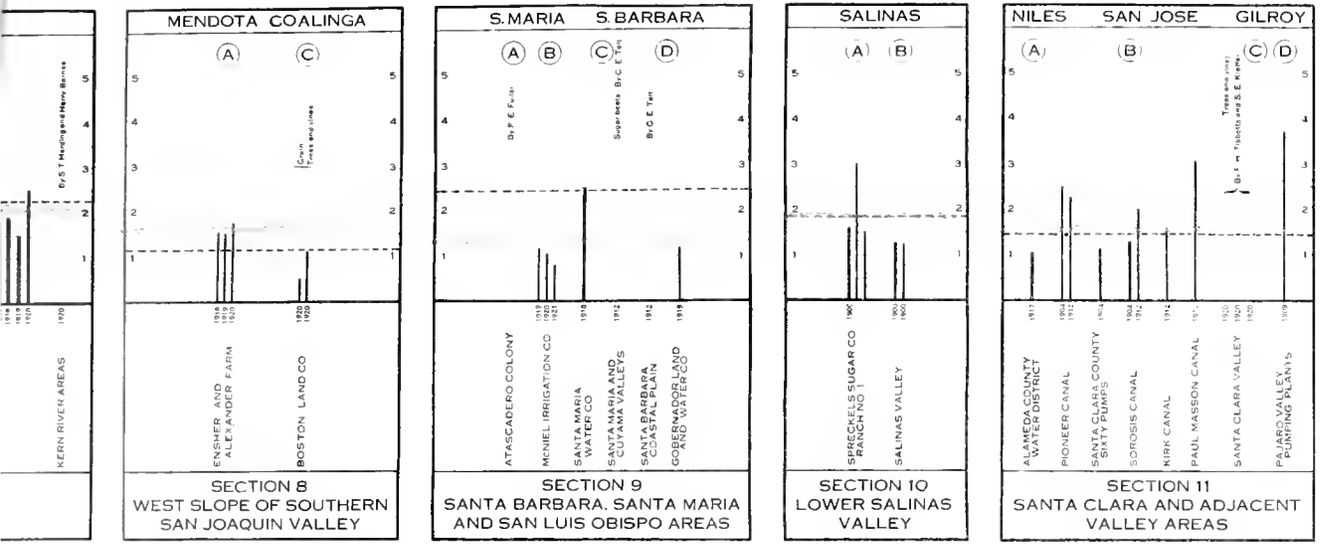
SECTION 12
DELTA LANDS OF SAN JOAQUIN AND SACRAMENTO RIVERS



SECTION 13
SACRAMENTO VALLEY FLOOR



SIERRA FOOT



NET USE OF WATER
AS MEASURED AND PROPOSED ON VARIOUS SYSTEMS

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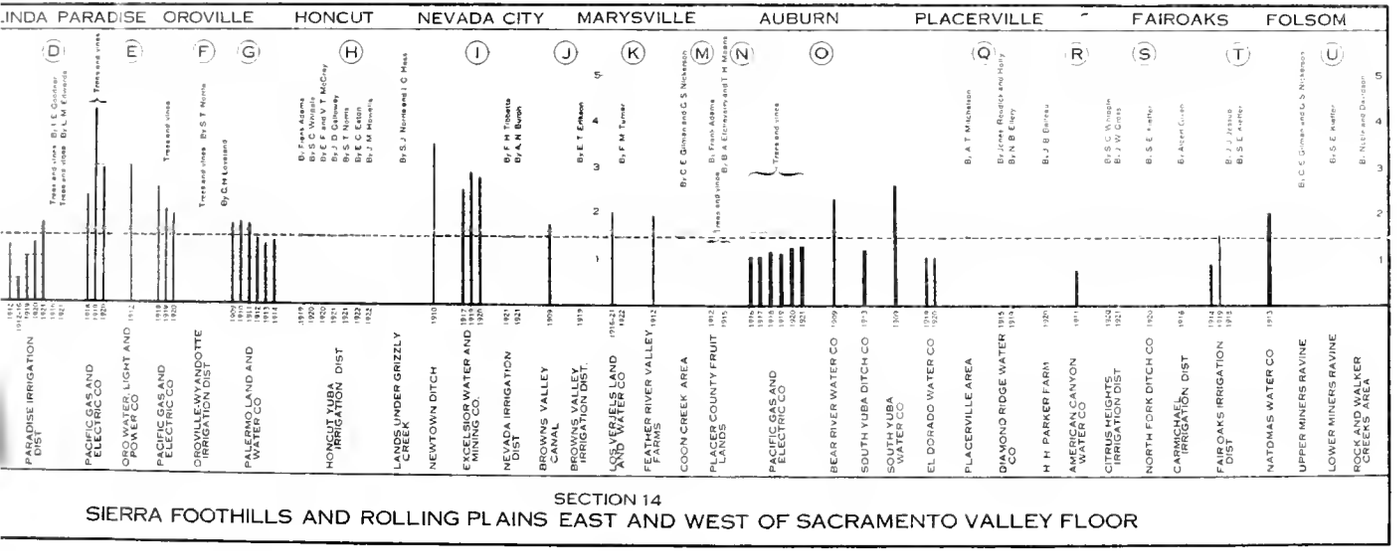
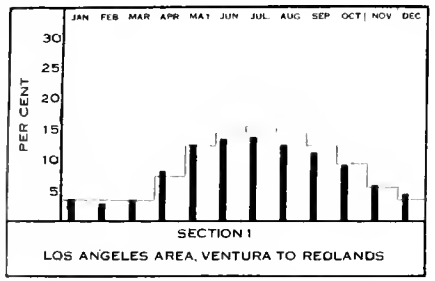
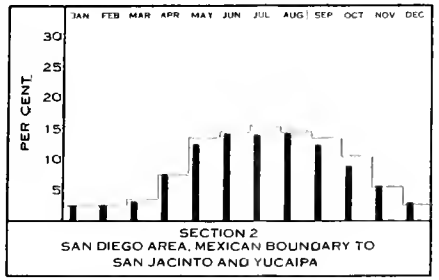
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER XI, 1927 STAT. 17

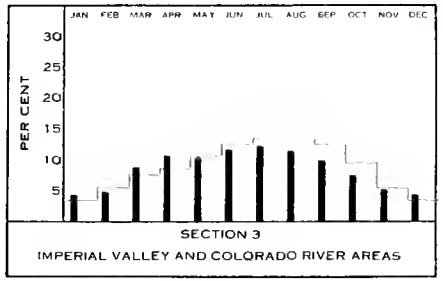




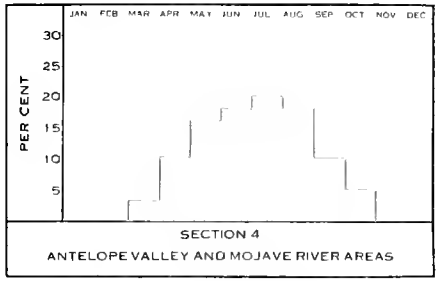
SECTION 1
LOS ANGELES AREA, VENTURA TO REDLANDS



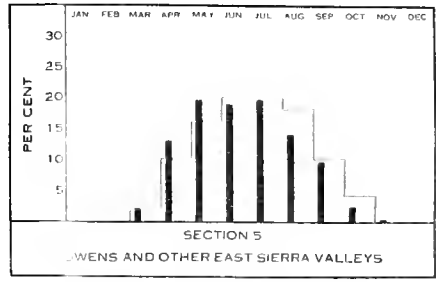
SECTION 2
SAN DIEGO AREA, MEXICAN BOUNDARY TO SAN JACINTO AND YUCAIPA



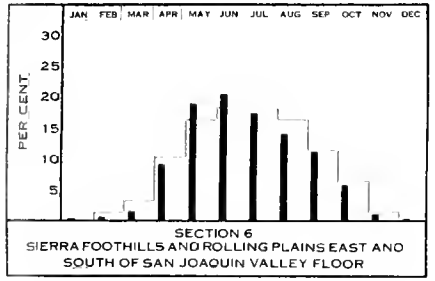
SECTION 3
IMPERIAL VALLEY AND COLORADO RIVER AREAS



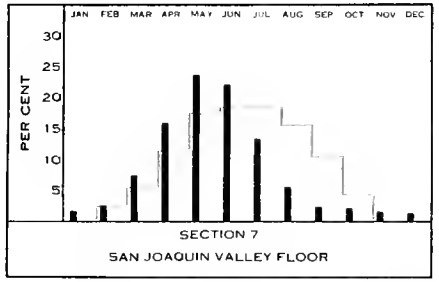
SECTION 4
ANTELOPE VALLEY AND MOJAVE RIVER AREAS



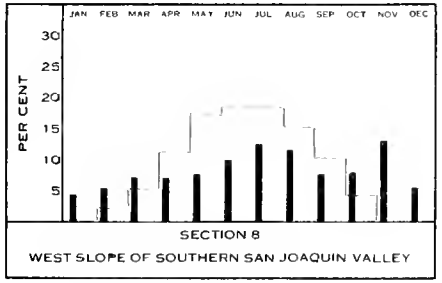
SECTION 5
OWENS AND OTHER EAST SIERRA VALLEYS



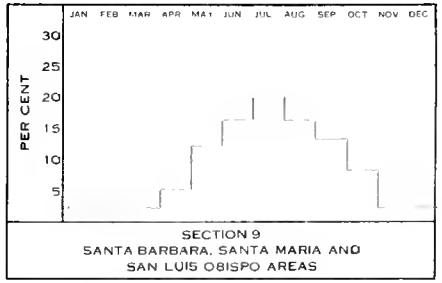
SECTION 6
SIERRA FOOTHILLS AND ROLLING PLAINS EAST AND SOUTH OF SAN JOAQUIN VALLEY FLOOR



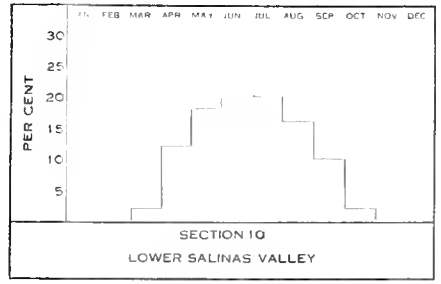
SECTION 7
SAN JOAQUIN VALLEY FLOOR



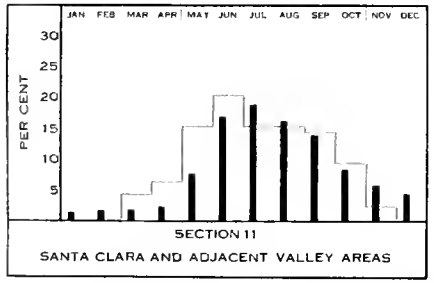
SECTION 8
WEST SLOPE OF SOUTHERN SAN JOAQUIN VALLEY



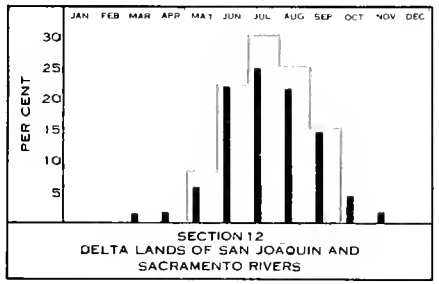
SECTION 9
SANTA BARBARA, SANTA MARIA AND SAN LUIS OBISPO AREAS



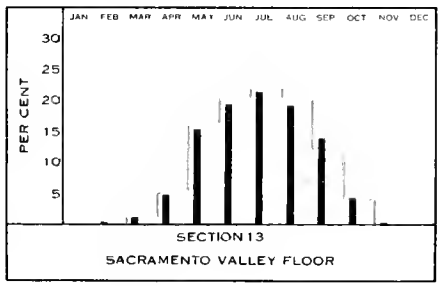
SECTION 10
LOWER SALINAS VALLEY



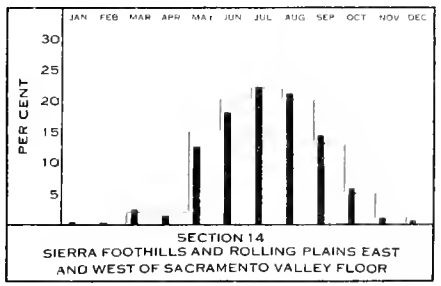
SECTION 11
SANTA CLARA AND ADJACENT VALLEY AREAS



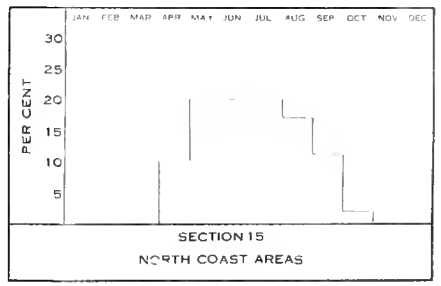
SECTION 12
DELTA LANDS OF SAN JOAQUIN AND SACRAMENTO RIVERS



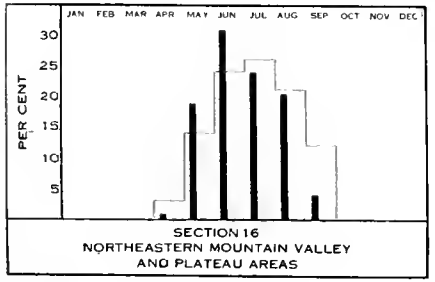
SECTION 13
SACRAMENTO VALLEY FLOOR



SECTION 14
SIERRA FOOTHILLS AND ROLLING PLAINS EAST AND WEST OF SACRAMENTO VALLEY FLOOR



SECTION 15
NORTH COAST AREAS



SECTION 16
NORTHEASTERN MOUNTAIN VALLEY AND PLATEAU AREAS

LEGEND

Weighted average measured monthly use.

Average proposed monthly use.

Desirable monthly use.

Ordinates show percentage of yearly use.

MONTHLY USE OF ANNUAL IRRIGATION SUPPLY

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING AND IRRIGATION
CALIFORNIA WATER RESOURCES INVESTIGATION
CHAPTER 889 1921 STATUTES